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RAIL-ROAD NEWS.

The Railway Carriage System in England.

The "New York Daily Times," of Monday, the 20th, had a really excellent article on the conservative stupidity of the construction and management of cars on the English railroads. It seems the Editor came near being offered up in a Fire-worshipper's bonfire—the car in which he was riding having been set on fire by a spark. This was by an accident, but only for an accident the car would have been burned up, as the engineer saw the smoke of the car by accident, and stopped his engine; there was no way to communicate with the engineer as with us, by a rope passing along from roof to roof, by which the conductor can make it strike a bell at the ear of the engineer. A gentleman wrote an article for a London paper, next day, giving an account of how we manage things in America, so as to prevent such accidents, but the London Editor, with a supercilious contempt for any thing new and useful coming from such a quarter, did not appear to think it worth publication. There are some excellent things about the management of English railroads, which are worth copying by us, but there are as many good things on our railroads, which are objects that are worthy for them to copy after. The mode of communication with the engineer is one of them, and we are the more surprised that this plan has not been adopted on the English railroads long before this, for this plan was illustrated in the "London Patent Journal" of May 22, 1847, four years before the accident took place, as described in the "Times." The American cars are far superior to those on the English railroads; we have no second class cars for the inferior classes, because all our citizens rank as gentlemen, and every man has his own coat of arms. It is a great shame to England that, with all the freedom of the press there, and with a constitutional government, everywhere a person goes, by steamboat and railroad, there is the manifest bar set up, to keep the working classes from coming between the wind and the nobility.

A Good Arrangement.

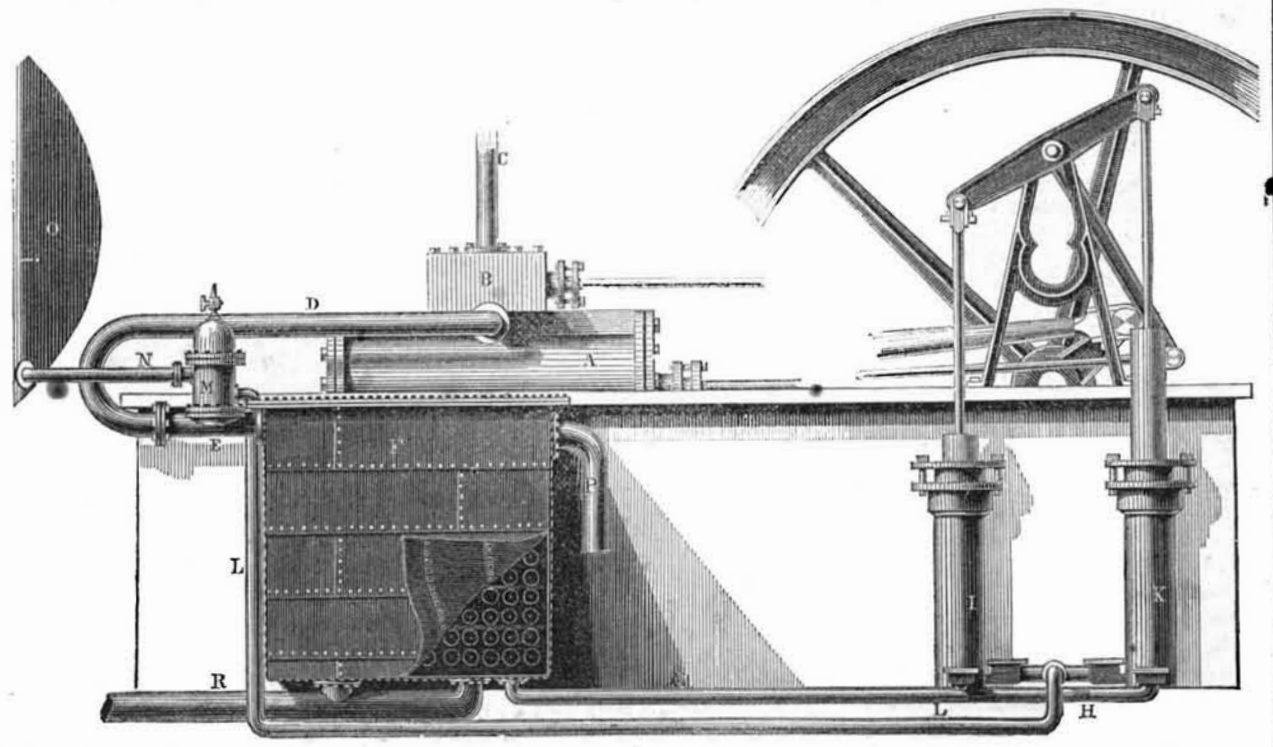
An arrangement has been made between the New York and New Haven, and Hartford, New Haven and Springfield Railway Companies, by which passengers are ticketed through without the annoyance of changing cars at New Haven. This arrangement removes a hitherto great objection to this route, and we feel assured that it will command an increased patronage.

A Mastadon in Connecticut.

The bones of a huge mastadon were lately discovered in New Britain, Conn. Where is it that the mastadon has not been a wanderer over our country? When it lived, there truly were giants in the earth in those days.

The machinists of Boston and South Boston are making extensive preparations for celebrating the anniversary of the bringing into operating of the ten hour law, which will come off the 1st of November.

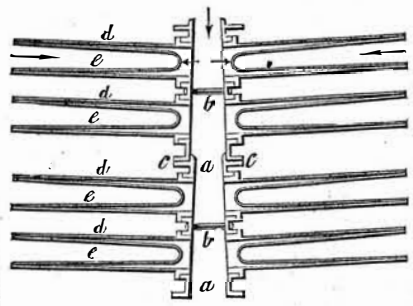
MILLER'S MONOZYMATIC CONDENSER FOR STEAM ENGINES.---Fig. 1.



The accompanying engraving are views of the improved Condenser, and its application to steam engines, for which a patent was granted on the 21st of October, 1851, the claims of which will be found on page 54 of our last volume. We refer to the claim because the Patent Office Report calls it a "Sugar Vacuum Pan," while the claim embraces the peculiar construction and arrangement of the tubes for condensing, which are applicable to condensers for both steam engines and sugar vacuum pans.

Figure 1 is a side elevation, showing the condenser applied to a steam engine; figure 2 is a vertical section, showing the interior of the condenser, and the form and arrangement of the tubes. The object of this condenser is to condense the steam as it passes from the exhaust pipe of the cylinder, by the application of cold water to the outside of the metal separate from the steam, and to return the condensed steam—pure water—as feed, to the boiler. The primary object of a condenser is to obtain a vacuum behind the piston, by the sudden re-conversion of the steam into water, thereby reducing its bulk. The vacuum obtained in common condensing engines, in good order, is about 13 lbs. to the square inch, which is just about 2 lbs. less than the pressure of the atmosphere, and is therefore so much gain to the engine, excepting the power required to work the air-pump, which must be deducted. The common method of condensing, is to let the steam come in direct contact inside of the condenser, with the cold condensing water, and keep pumping out the hot, at 100°, and supplying the condenser with cold water. The principle of condensing the steam by the outside application of water, is older than the injecting of cold water among the exhaust steam, but it has always been considered an inferior mode of condensation. Let us first describe this condenser, then dwell briefly on the principles and applications of the two modes of condensing, and the plans employed for these purposes.

FIG. 2.



In fig. 1, A is the cylinder of the steam engine; B is the steam box; C is the steam pipe, which feeds the cylinder and works the engine. D is the exhaust pipe, it conveys the steam from the cylinder after it has acted on the piston, to the condenser, by the pipe D E, This exhaust steam is allowed to pass into a heating vessel, M (the object of which will be explained hereafter) and then passes into the condenser, F. The steam is condensed in the inside of the tubes in the condenser by the application of a constant stream of cold water on the outside of the steam tubes. The cold surface water is supplied by a pump (not required to be shown) through pipe R; it rises up in a heated state by the radiated heat of the steam and flows off continually at the top through pipe P. The condensed steam inside falls to the bottom of the condenser in the state of water, and is pumped from the condenser through pipe L, and forced into the boiler, as pure feed water, by the two air-pumps, I K, which thus serve as feed pumps; the condensed steam in the state of cold water, as it is being forced by the two pumps to the boiler, through the pipe, L L, passes through the strong metallic vessel, M, and is heated to about the boiling point by the exhaust steam from the cylinder, and then passes into the boiler, O, through the pipe, N, at a very high heat. Whatever condensation takes place in heater M, the water flows easily into the condenser proper through pipe E. The great object in condensing the exhaust steam to save power, is to get a good vacuum behind the piston, and the great object in saving fuel is to return the water to the boiler, as hot as it is possible to do so, and in as pure a state as possible; this is believed to be successfully accomplished by this arrangement. There is an air chamber on the top of heater M, to let the accumulated elastic gas and air in the water escape from time to time; this can easily be done by the engineer, according to where the heater is situated, by the cock on the top of the air chamber. The arrangement and office of this condenser is now explained.

It was a great improvement in sudden condensation, when the cold water was first applied inside of the cylinder—injected among the steam—instead of on the outside, because it requires so much cold water to condense the steam—no less than 22·24 cubic inches of water to one of water converted into steam. James Watt endeavored, by his first condenser, to obtain enough of cooling surface to condense the steam inside by using thin hollow chambers, but he soon resorted to mixing the cold water with the steam again. Hall's Condenser, for the same purpose, consisted of a faggot of small copper tubes, but this condenser, we believe, is nowhere in use. Plenty of cooling surface can be obtained by pipes, &c., but owing to the expansion and contraction of the metal, at the joints, there is a continual tendency to leakage, and a leak destroys the whole object of the condenser. To construct a condenser upon principles to obviate the evils of leakage by the expansion and contraction of the metals, has been the object and aim of Mr. Miller, who has spent years in experimenting, expending thousands of dollars to obtain the grand desideratum.

Fig. 2 is a series of tubes united together by screw joints, with vulcanized india rubber between the flanges, *b*. The steam comes from the exhaust pipe, E, fig. 1, into the condenser by the centre tube, *a*, shown by the arrow, and has free passage at once to all the condensing tubes. These tubes are of a peculiar construction, each one is double, and the interior end, where the steam at first strikes it, is round and unconnected, and free to expand and contract, without affecting the joints. The steam passes into each pipe, as shown by the two short arrows at *a*, and the water goes into the inside pipe, *e*, as shown by the arrow, and is also applied on the outside at *d*; there is, therefore, a double cooling surface for the steam in each pipe; now it will, we presume, be generally admitted, that such a form of tubes, to make a perfect condenser, was not, in any likelihood, discovered by theory; it was not, the construction of these tubes is the result of experiment, and a condenser upon this principle, which has been used for months on an engine at the North Point Foundry, Cobb, Mason & Hill, Jersey City, has tested it so thoroughly with salt condensing water from the dock, that, by the candid statements of Mr. Hill, "it has not failed in any point, it has saved nearly one-third of fuel, and accomplishes all that can be desired of it." This condenser, therefore, is certainly worth the disinterested examination of all our engineers, and those especially interested in ocean steamers, and the steamboats running on the Mississippi. The old air pump is not required, the two small pumps, I K, acting as feed pumps, do not

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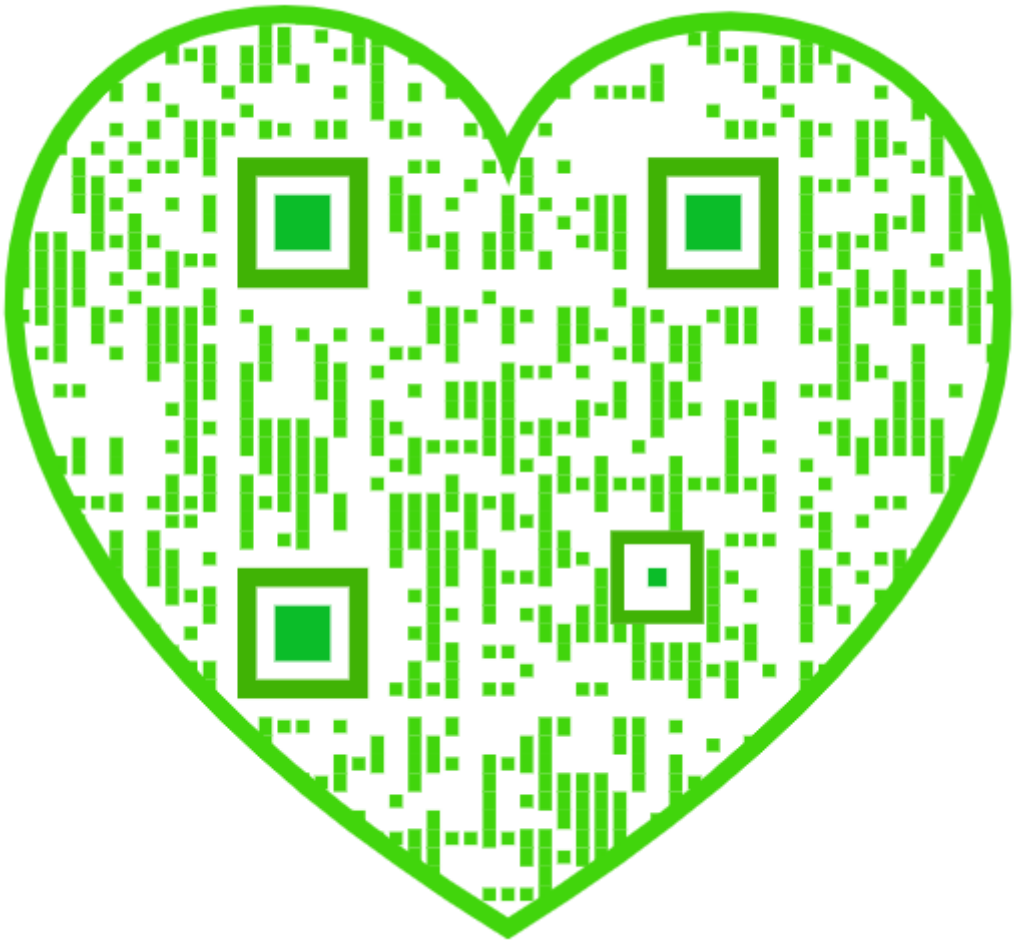

take so much power to work them as the old air-pump. The water used in the boiler is always pure; it requires less fuel to evaporate, and it obviates the formation of incrustations. A perfect workable surface condenser is one of the grand improvements required for steamships; have we got it here? is the question; those who have used it say it is the very condenser long sought for.

This condenser gives a facility for bracing so that it can be made of very light materials. The outside of the condenser case has only to support the weight of water in the vessel, and the atmosphere is perfectly excluded.—The sections of the condenser tubes can easily be taken apart and any of them easily repaired or cleaned when required. Larger tubes can be employed in this condenser than in Hall's, and this is a great advantage.

We could say much more upon the subject of condensers, but we have not room at present, and as we intend to present, in a short time, other views of this excellent condenser, as applied to ocean steamers, we will defer further comments until then. This condenser is shown as adapted and applied to stationary engines and river boats, the one for the marine engine will be arranged in a different manner, and will have an Evaporator attached to provide any amount of fresh water required for any purpose. For high pressure engines this condenser will involve some extra expense of machinery, but it will save it all in fuel. The inventor has had long experience as an engineer on the southern waters, and he believes it will operate perfectly on western boats.

More information may be obtained of the inventor and patentee, James M. Miller, No. 9 Laight st., this city.

MISCELLANEOUS.

Wool from Wood.

Not far from Breslau, in Silesia, in a demesne called Humboldt's Meadow, there are two establishments, in one of which the leaves of the pine-tree are converted into a species of wool or cotton, and in the other the waters left from the manufacture of this substance serve to supply medicated baths for the use of sick persons. These establishments were both set on foot under the superintendence of a forest inspector, M. de Pannewitz, the inventor of a chemical process for extracting from long and slender pine leaves a very fine fibrous substance, which he calls "wood wool," on account of its possessing the same felting and spinning properties as ordinary wool.

The circular leaves of pines, firs, and other coniferous trees, are composed of clusters of extremely delicate, adhesive fibres, surrounding and holding together a resinous substance. This reasinous substance may be dissolved by boiling, and by the employment of certain reagents; it then becomes easy to separate the fibres from each other, to clean them, and remove any extraneous matter. By this treatment the wooly material acquires a greater or less degree of fineness. The pine may even be stripped when quite young; for if the verticles or whorls at the end of the branches are left, the tree will continue to grow. The stripping off of the leaves takes place every two years.

The use to which this wood-wool was first applied was to substitute it for cotton or woolen wadding in quilted blankets. In the year 1842, the hospital at Vienna purchased five hundred of these blankets, and after making a trial of them for several years, sent an order for a further supply. It has been observed that when the pine-tree wool is employed, the beds are quite free from any sort of parasitical insects, and it diffuses a very agreeable and salutary fragrance. Furniture in which this material is employed is free from moths. Its cost is three times less than horse-hair, and the most skilful upholsterer could not distinguish an article stuffed with this substance from one stuffed with horse-hair. This wool may be spun and woven, the finest quality yielding a thread very similar to flax, and quite as strong. When combed, spun, and woven (?) like cloth, it may be employed for carpets, saddle-cloths, &c., and combined with a weft of linen or calico, it may be made up into coverlets.

The liquid residium resulting from the boiling of the leaves, has a most salutary influence when used as a bath. The reputation of the baths has increased since their establishment nine years ago. The liquid residium may, moreover, be concentrated, and sent in close jars for use in private houses.

The membraneous substance obtained by filteration, when the fibre is washed, is put up in the shape of bricks and dried, when it may be used as fuel, and produces a very considerable quantity of gas for lighting purposes. About a thousand cwt. of wool leaves a quantity of fuel equal in value to more than 180 cube feet of pine-wood.—[London Mechanics' Magazine.

Rinds of Fruit Indigestible.

The fact cannot be too strongly impressed upon the public. It applies to all fruit without exception, and includes also the pellicle or skin of kernels and nuts of all kinds. The edible part of fruit is particularly delicate, and liable to rapid decomposition if exposed to the atmosphere; it is, therefore, a provision of nature to place a strong and impervious coating over it, as a protection against accident, and to prevent insect enemies from destroying the seed within. The skin of all the plum tribe is wonderfully strong, compared with its substance, and resists the action of water and other solvents in a remarkable manner. If not thoroughly masticated before taken into the stomach, the rind of plums is rarely, if ever, dissolved by the gastric juice. In some cases pieces of it adhere to the coats of the stomach, the same as wet paper clings to the body, causing sickness and other inconvenience. Dried raisins and currants are particularly included in these remarks, showing the best reasons for placing the fruit upon the chopping board with the suet in making a pudding of them; for if a dried currant passes into the stomach whole, it is never digested at all. When horses eat oats or beans that have not been through a crushing mill, much of this food is swallowed whole, and, in this state, being perfectly indigestible, the husk or pellicle resisting the solvents of the stomach, there is so much lost to nutrition. Birds being destitute of teeth, are provided with the apparatus for grinding their seed, namely, with the gizzard, through which the seed passess, and is crushed prior to digestion. The peels of apples and pears should always be cast away. Oranges we need not mention, as this is always done Orleans, green gages, damsons, and all plumbs, should be carefully skinned, if eaten raw; and it put into tarts they should be crushed before cooking. Nuts are as indigestible as we could desire, if the brown skin be not removed or blanched, as almonds are generally treated.

Peaches should be denuded of their skins before they are eaten, if any person wishes to know how to eat one, let him watch a monkey at the operation.

Meteoric Phenomenon at Texas.

An annoymous correspondent of the Galveston Journal writes from Brazoria, Texas, under date of the 18th inst.:—

"I send you an account of a remarkable phenomenon, which was seen here on Monday night (16th) last. It was a meteor of a splendor and beauty of appearance seldom witnessed. About half past 10 o'clock in the evening it appeared in the east, and I think 50° above the horizon. To the observer it seemed to be about the size of the sun's disc, and very brilliant. The whole heavens were lighted up with its radiance, and the most minute objects were as plainly visible as in the light of day. Its path was across the heavens from east to west, passing 20° south of the zenith, to about 40° above the western horizon, where it burst into ten thousand fragments. Its passage occupied apparently four or five seconds. As it burst, the fragments of it, like sparks from a sky-rocket, appeared to fall for about a second, and then disappeared. Immediately after it burst there appeared a pale blue light, which traversed the path of the meteor to the place where it first became visible, and there disappeared. The whole was attended with no noise.

[This, in our opinion, is too meteoric an account to give full credence as a fact.

The Cholera.

J. X. Chaubert, M. D., of this city, a very distinguished personage, has published a pamphlet containing his observations of the origin, treatment, and cure of Asiatic cholera, and cholera morbus, which are the result of forty-five years' experience in Asia, Europe, and America. Cholera, he considers, is a fever caused by the poison of a small green insect diffused through the atmosphere, invisible to the naked eye, but easily seen under the action of a powerful microscope. The insect, he states, is inhaled, and by fixing itself into the mucous membrane of the stomach and lungs, produces inflammation, which is transmitted to the liver, through the duct leading from the stomach to the gall bladder, and extending itself to the spine, brain, and heart, through the irritation of the nerves, thus producing all the symptoms of cholera. To discover whether such an insect really exists, the following is the plan to pursue:—bare the arm to the shoulder, and hold it over the head for some time, then examine it with a powerful microscope, and if millions of minute green insects are observed on it, then, for a certainty, cholera is there; if not, no cholera is there. These insects, he believes, are produced by the exhalations of malaria, &c., and are carried by winds from place to place. This is a very different theory from that of Dr. Jackson, who believes cholera to be a geological disease.

M. Chaubert lays down a great number of predisposing causes of this disease, any of which will account for cholera in peculiar seasons, without the green insect theory. He has discovered a method for the successful treatment of cholera, which he is going to publish as soon as the governments of various nations have compensated him for the same. M. Chaubert has himself been very successful in the treatment of cholera; he says the practice of physicians in this country has been to dose with calomel, and calomel and opium, and he believes the grave does not owe half so many of its tenants to cholera as to malpractice. This may be, and no doubt he has had good opportunities of judging, but we have information from a very experienced physician of Cincinnati, who asserts that no disease yields more kindly to him than cholera, when taken at the stage of its premonitory symptoms.

Scythe Making in New Hampshire.

Near Wilmot, N. H., is the New London scythe factory village, where an extensive business in the manufacture of scythes is carried on by Messrs. Phillips, Messer, Colby & Co. Their works are located on the Blackwater river, just below the outlet of Pleasant Pond. They are furnished with six trip-hammers, and other machinery suitable for turning off a large amount of work with despatch.

The works, when in full operation, turn out from twelve to fourteen dozen of scythes per day, and produce annually about three thousand dozen, most of which are consumed in the New England States. In their manufacture, from thirty to forty tons of iron, one hundred and fifty tons of hard coal, five or six thousand bushels of charcoal, and twenty or thirty tons of grindstones are consumed.

The First Locomotive in Ameaica.

This wonderful machine is not dead yet, a correspondent of the "Philadelphia Ledger" sends that paper the following account of this veteran war-horse of the iron track:—

"Your readers are doubtless aware of the fact, that the first locomotive seen upon this continent was imported from Liverpool; however, many of them, perhaps, have forgotten that that locomotive is not entirely extinct, but remains a curiosity. The L. S. R. R. Co. recently erected a very beautiful machine shop, which is under the superintendence of Mr. Phleger, a practical machinist, and through his direction this ancient locomotive has been repaired. This afternoon she took her place upon the L. S. R. R., and at 2 o'clock started with the passenger train, for Port Clinton, did her work well, and returned at 7. This locomotive is truly a curiosity, from the fact of its antiquity, and its singular arrangement of machinery. She is once more to be seen winding her way through the mountains, upon the banks of the Little Schuylkill, where the whistle of the first locomotive resounded upon the continent of America, and that from the Cattawissa, as she is no styled.

Tamaqua, Schuylkill Co, Pa."

Death of Vanderlyn, the Artist.

A pioneer in American art, and cotemporary of Stuart, Trumbull, and Allston, has died at a ripe old age. John Vanderlyn was born in Kingston, Ulster Co., N. Y., in October, 1776, and died there on Thursday last week. Having early developed a taste for painting, Aaron Burr became his Mæcenas, and sent him to this city to study with Stuart, and afterwords he went to Europe in 1796, that period until 1815, he resided mostly at Paris, Rome and other places of interest, studying diligently and improving rapidly. While abroad, he painted his "Marius Amid the Ruins of Carthage," and "Ariande," which attracted great attention. Upon his return, he was principally engaged in portrait painting, but produced panoramas of Paris, Athens, Mexico and Versailles, for exhibition in the old New York Rotunda. In 1839 he went to Paris, where he painted the "Landing of Columbus," by order of Congress. Of his portraits, those of Col. Burr, Judge Benson, President Madison, Monroe, and Taylor; Calhoun, Dewitt Clinton, &c., are well known. He died poor, having involved himself by the building of the Rotunda, from which he never was able to extricate himself.

Vanderlyn built the Rotunda in the Park, for a panoramic Hall, it was afterwards the post office, and is now city property.

To Prepare Seed to Obtain Crops without Manure.

About nine months ago there were some extracts published in the daily papers, as items of foreign news, wherein it was stated that a discovery had been made in France, whereby seed could be prepared so as to obviate the practice of manuring lands, crops being obtained thereby equally as good as by the old plans. We have had some inquiries about this discovery, our readers supposing that if there was anything in it we would know something about it. We can only say that Liebig has obtained good results by treating grains in the following manner: the seeds were softened by being steeped in liquid manure, then sprinkled over in a moist state with a mixture of 20 per cent. of bones in fine powder, and one of plaster of Paris; in sprinkling water over these, and sifting more bone powder and lime over them the second time, the layer of manure which enveloped the seeds was more durable. The seeds were then dried in the air and sown in the usual manner. This process (adds Liebig) is not perhaps sufficiently simple to be made use of on a large scale, and is replaced advantageously by the use of a good manure of plaster of bones applied in the usual way.

To Bronze Brass, Etc.

To 6 lbs. of muriatic acid add 2 lbs. of oxide of iron, and 1 lb. of yellow arsenic; mix all well together, and let it stand for two days, frequently shaking it in the meantime, when it is fit for use; whatever may be the article which requires bronzing, let it be perfectly cleaned and free from grease, immerse it into the above solution and let it stand for three hours, or rather till it will turn entirely black; then wash the spirits off and dry it in sawdust, which has been found the best; after the article is perfectly dry, apply to it some wet black, the same as used for stoves, and then shine it up with some dry black-lead and brush, and it is fit for lacquering.

Sulphate of Lead to be used as a Substitute for White Lead in Painting.

To 100 parts of litharge add 30 parts of salt, and let it stand five or six days at a temperature of from 59° to 68° Fah.; then add 80 to 90 parts of concentrated commercial sulphuric acid and 30 parts of water; keep at a temperature of 177° to 194° Fah., for three hours; distil off the muriatic acid; the sulphate of lead remains, which should be well washed and dried for use.

New York Mechanics' Institute.

The classes of this institution will be formed on Monday evening, Oct. 4th. The rooms are at No. 1 Bowery. Drawing and mathematics will be taught to those young mechanics who have the spirit to progress and rise.

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For the Scientific American.

The Employment of Zinc in the Construction of Domestic Utensils, and the Influences of the same on Health.

In consequence of the various uses for which metallic zinc is employed in the every-day pursuits of life, as in the construction of cisterns, gutters, water coolers, &c., it becomes a matter of no small moment to determine the influence which such practice exerts upon the health of persons who are in the habit of using this metal for such purposes.

It is commonly supposed that when metallic zinc is placed in water, its surface becomes covered with a thin coating of the sub-oxide, which does not increase in thickness, and that this film protects the metal from further action of chemical agents. Now, although this is true when that substance is exposed to the atmosphere, it is not the case when it is kept under the surface of water. Thus, when the water of the Ohio river, for example, is placed in a zinc vessel, freely exposed to the air, the carbonate and hydrated oxyde of zinc are rapidly formed, and subside to the bottom of the liquid. These substances are more rapidly formed in pure water than in that which contains saline or organic matter in solution. Water from melted ice is more corrosive than either well or river water, from the fact of its having parted with the salts and other matters, which it held in solution, in the act of freezing. The compounds thus formed are not soluble in water, but as they may be mechanically suspended in it, and by that means find their way into the system, it becomes highly important to determine their action on the animal economy. The carbonate of zinc does not appear to possess any poisonous action, no case, where it has produced serious consequences, ever having been reported. The oxide of zinc is not a very active substance, there being but one instance on record where it produced symptoms of poisoning. In that case the individual took twenty grains daily, until he had consumed the enormous quantity of three thousand two hundred and forty-six grains—a larger amount than is ever likely to find its way into the system under the circumstances above mentioned. The following symptoms were observed:—face of a pale earthly hue, great emaciation, loss of appetite, mental imbecility, &c.

The oxide of zinc, which is extensively manufactured in this country, is used as a substitute for white lead. This substance is employed with a view of avoiding the poisonous effects of the latter on painters and others, who are subjected to its deleterious influence. It has been supposed that this oxyde might give rise to metallic colic, and Dr. Bouvier relates the case of a man, employed in the zinc paint works, who experienced a very serious attack, resembling lead colic, but as much of the zinc of commerce contains lead in various proportions, the disease was probably caused by that metal. Later investigations, on this subject, have proved that the oxyde of zinc is incapable of producing symptoms resembling the lead disease.

On examining river, rain, and ice water that had stood for a number of weeks in zinc vessels, I could never detect a trace of lead in it. It is altogether probable that should the lead, which is alloyed with commercial zinc, find its way into the system, it is not in sufficient quantity to produce serious consequences.

It is not alone for water vessels that zinc is employed, for it has been used, for some time, in the construction of utensils for holding milk during the separation of cream. In this respect zinc exerts a very peculiar influence, which is not, however, confined exclusively to that metal. It is found that the cream separates more readily and in greater abundance, when fresh milk is placed in a zinc vessel, than in an earthen one. It is interesting to trace the cause of this; it is found that the lactic acid fermentation takes place sooner in milk when kept in an earthen vessel than it does in one of zinc, and that, too, when it is allowed to become cold before it is placed in them for experiment, so that it is not due to the more rapid abstraction of heat from the milk in the latter, from its superior conducting power, which would retard the transformation of the sugar of milk into lactic acid. I also observed that the putrifactive decomposition of the milk set in earlier in that which was contained in the earthen vessel than the zinc one. It must be borne in mind that in the first of these tranformations, the change begins in the protenic or caseous compound of the mild, and that if, by any means, this can be prevented, the milk sugar is never converted into lactic acid. Now, when the anticeptic power of all of the salts of zinc is taken into account, it will not be difficult to explain these remarkable results. Thus, when milk is placed in a zinc vessel, the oxide, which covers its surface, is divided between a portion of each of the acids which are combined with the alkaline and earthy bases of that fluid, and in that way rapidly diffused through it; and the salts, thus formed, by their anticeptic power, prevent the incipient putrefaction of the caseous matter of the milk, which is always the primary cause of the souring of that liquid.

It is highly important to determine whether the practice of allowing milk to remain in zinc vessels is injurious to health. From the attention which I have given this subject, I think it is not if the milk be removed before the lactic acid fermentation commences, as by that means the formation of the lactate of zinc would be prevented, which is the only salt at all likely to be found in sufficient quantity to give rise to serious results. It is said that nausea and vomiting have been produced by the use of milk and cream that have been allowed to stand in zinc vessels; but this is not likely to occur if the milk be removed before it becomes sour; it must also be remembered that the lactate of zinc is the least soluble salt of that metal.

Metallic zinc, or rather the salts formed of it, exerts a similar influence in retarding the putrefaction of urine. This is not surprising, when we bear in mind the analogy between the changes which this fluid undergoes, during putrefaction and the lactic acid fermentation. The putrefaction of the organic matter which exists in river water, is retarded when that liquid is kept in a zinc vessel; and the same remark will apply to all waters containing nitrogenized substances

The rancidity of fats and fixed oils is retarded by being in contact with a zinc surface, and I find that a small portion of the oxide or carbonate of zinc, rubbed up with any of the fats, exerts a similar influence.

CHAS. W. WRIGHT, M. D.

Cincinnati, Sept. 14, 1852.

Cyanide of Potassium.

The following is the process of M. Clemon, a chemist of Paris, for obtaining this salt, which occupy such an important place in the industrial arts, especially in electro plating:—

Mix intimately eight parts of ferro-cyanide of potassium, perfectly de-hydrated by calcination, and three parts of perfectly dry carbonate of potash, and heat the mixture in a covered crucible, or what is better an iron pot, until the fused mass attains a red-heat, when it will become limpid, and a sample taken out with the rod and cooled, will appear perfectly white, in this state all the ferro-cyanide is reduced. If the crucible be now taken out of the fire, the disengagement of the gas ceases when the mass has become a little cool, and the iron which has been separated in the operation so disposes itself, that with a little address and slight tapping of the crucible, the principal part of the cyanide of potassium may be poured off from the iron, which remains in the crucible.

To obtain the cyanide perfectly free from iron, place it across an iron ladle, pierced with fine holes, and strongly heated beforehand, in a vessel also heated, of greater height than width, either of silver, iron, or porcelain, or even fire-ware, but with smooth sides, and let it gradually cool. In this state the ferruginous portion may be extracted by means of a sharp instrument from that which is free from iron. The purity of the cyanide of potassium entirely depends on the purity of the materials employed; the presence of sulphur in the carbonate of potash should therefore be avoided; the ferro-cyanide of potassium of commerce almost invariably contains sulphate of potass, the presence of which is objectionable. The use of purified tartar might perhaps be advantageously substituted for that of carbonate of potash. Should any sulphur be present, a sulphuret of potassium would be formed in the cyanide of that metal, from which considerable inconvenience would arise in the employment of the cyanide in chemical analysis, and in its application to the preparations of the gold, silver, and copper solutions employed in the electro-plating processes.

When the mixture is melted, as before mentioned, there is at first formed only cyanide of potassium and carbonate of the protoxide of iron; but this last quickly changes, at the temperature to which it is exposed, into carbonic acid, carbonic oxide, and sesquioxide of iron; and this last, when the cyanide of potassium is melted, becomes converted into metallic iron. It is only by a long sustained heat that the carbonate of protoxide of iron is decomposed, so that long after the decomposition of the ferrocyanide of potassium, and the formation of cyanide of potassium has taken place, there is still a disengagement of gas. Consequently, the proportion of cyanide of potassium, which is simultaneously formed, should entirely depend on the duration of the fusion. The iron which remains after a prolonged fusion of the cyanide of potassium, out of contact of air, being washed with hot water, disengages, when an acid is poured on it, not only hydrogen, but always a little carbonic acid gas.

If we follow the directione given in most chemical works, where Liebig's process for the preparation of cyanide of potassium is incorrectly given, and in which it is stated that the materials must be melted, so that the mass submitted to a bright red-heat becomes tranquil,—only a grey-colored product will be obtained.

If a closed iron vessel be employed, and the disengaged gases collected, it will be seen that in proportion as the temperature rises, the relative proportion between the carbonic acid and the carbonic oxide changes, the latter constantly increasing. It is evident that at a high temperature, one portion of the carbonic acid, which passes through the cyanide of potassium, should be reduced into carbonic oxide, and this reduction, without doubt, extends even in part to the carbonic oxide itself; that is to say, that its carbon is separated, and that this renders the product of a grey color. If we dissolve in cold water some cyanide of potassium completely free from particles of iron, and which has thus become grey, and filter the solution, there remains in the filter a black substance, which, being dried, burns away completely on a slip of platinum, and in fact, possesses all the qualities of charcoal. This carbon, in a state of extreme division, does not separate, either by fusion or repose, from the cyanide of potassium, on account of its feeble specific gravity. If a little of this grey cyanide be added to each new melting it may be purified from this carbon, and no injury done to the product of the new materials employed, as the iron in separating, withdraws the finely-divided carbon, and leaves the cyanide in a state of purity.

McCormick's Reaper in England.

We recently gave an account of a trial of reaping machines at Lewes, England, by a Committee of the Royal Agricultural Society, when the premium was awarded to Garret's improved Hussey Reaper, on the ground that it cut closer to the soil. A number of trials have been made in that country of a more thorough character between the said machines, and reports have been made favorable to McCormick's. The London Times of the 9th ult. contains an account of a trial between one of McCormick's and two of Hussey's, in cutting 100 acres each, about which a favorable report was made of McCormick's reaper, by a Committee of the Royal Agricultural College at Cerincester. The following is a report taken from the Scotsman, of Sept. 8, 1852, an able paper published in Edinburgh. It says:—

"In quoting the reports on the late trials of the rival American reaping machines in various parts of England, we omitted to give the report of the Committee of the Driffield Farmers' Club:—

'Though your committee had expected the following machines to be on the ground, viz.:—M'Cormick's, represented by Mr. W. S. M'Cormick (brother of the patentee); Hussey's, by Mr. Crosskill, of Beverley; another of Hussey's, by Messrs. Dray & Co.; and one by Mr. Wray, of Leeming; only the two former were submitted to their inspection, and, as the competition was confined to these two only, your committee was able to bestow a more undivided attention on their respective merits than had a larger number competed.

The trial took place on Friday the 13th inst., on a crop of wheat at Kelleythorpe, and, had your committee confined their report simply to the direction they received from the club, as to their superiority, and "which of the machines is best adapted for practical use in this district," their labors might have been brought to a close by stating that M'Cormick's machine was, in their opinion, superior to Hussey's in every respect; and that, on all standing crops of grain, of whatever kind, and where the ground was tolerably even, M'Cormick's may be advantageously employed.

But, as your committee are of opinion that it would be more satisfactory, not only to individual members of the club, and an act of justice to the owners and patrons of the successful machine, they beg to suggest the propriety of their being permitted to lay before the club, somewhat in detail, the reasons which led to the conclusion they come to; and fearlessly state, notwithstanding adverse decisions, that M'Cormick's reaper, as regards power, speed, efficiency, and apparent durability, is far superior to Hussey's.

M'Cormick's machine is six feet wide, and Hussey's five feet; but, as it would be impossible always to keep up the cutting exactly to that width, they conceive that six inches less is all that can be calculated upon, and that these widths—viz., five and a-half feet, and four and a-half feet—and the horses moving at an average speed of two and a-half miles an hour (a speed which your committee would recommend,) Hussey's machine would, in five and a-half hours, cut seven and a-half acres; while, in the same time, and with fully as little horse power, M'Cormick's would do 9 a. 0 r. 26 p. Another matter worthy of consideration is that one man only is needed to drive the horses in M'Cormick's, the horses being yoked abreast; whilst two are necessary in Hussey's, having to draw in a line.—M'Cormick's machine also possesses another advantage in having a wooden reel, which, without injury to the corn, materially assists the man who pulls away the sheaves, and gives him a better opportunity of adjusting their size.

But the greatest superiority in M'Cormick's machine over that of Hussey's, which your committee have to notice, is that of the sheaves, when pulled off, are laid in such a way as not to impede its working, so that two men and two horses may move on uninterruptedly, leaving the rest of the laborers to be otherwise employed; while in Hussey's the sheaves are left behind and a sufficient number of workmen is consequently required to remove them, so that the machine may go on. This your committe need not point out as a grave objection, more especially when the crops are much mixed with clover or seeds, and it is desirable to let the sheaves remain unbound for a few days.

Your committee are further of opinion that, from the violent reverberatory motion imparted to every part of Hussey's machine, durability is not to be expected, and that the form of the serated cutters in M'Cormick's machine is far preferable to the deeply indented cutters in Hussey's, and that they will not nearly so often need renewing.

Your committee now beg to state that the above conc usions have not been hastily adopted, and that their best and closest attention was given during the working of the machines; that they have no particular or party purpose to serve, their only object being to recommend that machine which they consider most likely to benefit themselves and the farming community generally, and that, in giving a decided preference to M'Cormick's, their opinions were unanimous.' "

Ohio Wines.

Messrs. Longworth & Zimmerman, of Cincinnati, will put up 150,000 bottles of still, and 180,000 bottles of sparkling Catawba wines this season. There are 1,200 acres of grapes under cultivation near that city.

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NEW INVENTIONS.

New Machine for Paring Apples, &c.

We have recently seen a machine for paring apples, &c., invented by Wm. Lazelle, of which Messrs. Smith and Fenwick, 14 Vandam street, this city, are the assignees, which is peculiar in its construction and superior in its operation. The knife is stationary, and the fork which holds the apple to it revolves, and has two motions, the one rotary and the other in a transverse horizontal arc from the heel to the point of the apple; the fork which holds the apple is mounted on a spindle which receives motion by a pinion working on a stationary rack, which is part of a circle. The machine is operated by simply pushing the handle backwards and forwards, making the wheel to traverse over the stationary rack, and thus move the spindle on which is the apple fork.

Copper Buoys for Steamboats.

G. W. Hildreth and S. L. Chase, of Lockport, N. Y., suggests to us the propriety and utility of furnishing buoys made of sheet copper for steamboats and other sailing vessels. They can be made of a shape to be placed under seats, under berths, between timbers, and stationary seats can be made of them. Enough of them can be secured in different parts of a boat to float it, if it should spring a leak, and they would not be burned if the boat caught fire. In this respect they have a decided superiority over cork, or india rubber inflated buoys.

Improved Scythe Fastening.

Messrs James Broadhead, William Broadhead, and A. B. Cobb, of Jamestown, Chataque Co., N. Y., have taken measures to secure a patent for a new improvement in scythe fastenings. By means of a metal loop and a screw the scythe is secured and fastened to the snath in a far superior and convenient manner to that of wedges, and at the same time the screw sets the scythe to give it the peculiar *hang* suitable to every mower, by raising the heel or setting the scythe, as may be desired. By turning the screw in one direction the scythe is fastened, and by turning it in the contrary direction it is loosened, this is quickly done, and certainly it is a simple mode of doing it.

Improved Lock.

Messrs. Thomas Murphy, and W. H. Butler, of New York City, have invented an excellent improvement in locks for safes, bank vaults, &c. The improvements consist of a peculiar manner of operating the tumblers of the lock by means of racks, and placing the tumblers and racks within suitable cases, the tumbler case being movable, thus allowing the tumblers to be thrown out of gear with racks. By this arrangement the key may be changed or altered in form every time the door of the safe or vault is locked, thus rendering the lock less liable to be opened by burglars. There is also a guard or stop so arranged as to prevent a pressure being obtained upon the bolt of the tumblers, thus securing the great means of preventing the lock being picked. Measures have been taken to secure a patent.

Improvement in Buckles.

Peter P. R. Hayden, of this city (New York) has invented a new and useful improvement in buckles, the nature of which consists in a peculiar manner of uniting the two ends of the body of the buckle by means of a boss at each of the ends, which form a bulb, around which one end of the tongue is clasped. The end of the tongue which surrounds the bulb has a grove in it to prevent it from slipping off. By this arrangement the two ends of the body of the buckle are firmly secured to the tongue, and it is always kept in its proper place. Measures have been taken to secure a patent.

New Cut-Off.

Wm. Camerer, of Reading, Pa., has invented an improvement in valve cut-off gear for locomotives and other engines, for which he has taken measures to secure a patent. The cut-off is that which slides on the back of the slide valve, and the improvement consists in connecting the cut-off with a slotted link, one end of which is connected with the valve eccentric and the other end with another eccentric, set in a different position on the crank axle, the means of connection between the cut-off and link being a stud secured to the cut-off rod, and furnished with a box fitting to the slot in the link. By moving the link so as to bring either end nearer the stud, the relative movements of the valve and cut-off are altered, and the time or point of the stroke of the piston at which the cut-off is effected, may be varied at the pleasure of engineer.

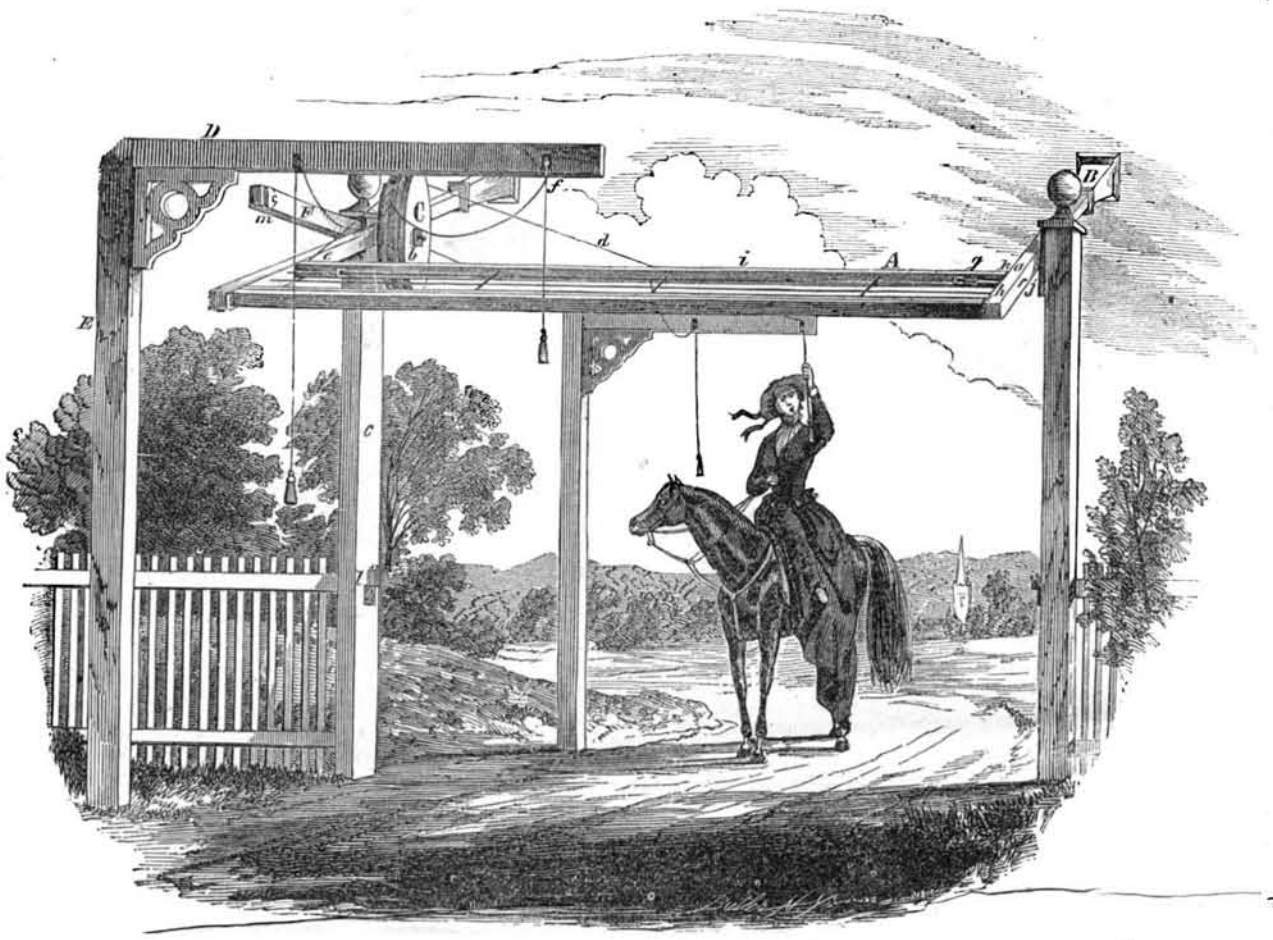
A New Composition.

We see it going the rounds of the daily papers, that Lieut. Watson, of the British Navy, has proposed a mixture of india rubber and saw dust, as a lining for the interior of vessels. By its elasticity it collapses when penetrated by a ball, it deadens concussion, and by its buoyancy will keep a vessel afloat, though it be riddled with shot; it also prevents splinters. This composition, although set forth by those papers as something new, is some years old, and was proposed two years ago to line iron steamers with.

Plow and Cultivator Combined.

We have received from some source a small model of a Plow and Cultivator combined. If we mistake not, it is the second one of the kind sent us; now, as there is neither name on the model nor letter accompanying it, we are of course unable to correspond with the inventor. We earnestly solicit persons who send models to this office, that they attach cards to them, bearing the inventor's name and residence, this will save considerable trouble and delay.

PATENT BALANCE GATE.



The accompanying engraving is a front elevation of an improved Balance Gate, invented by William C. Van Hoesen, of Leeds, Green Co., N. Y.; a patent was granted for it on the 14th of last April.

A is the gate, having its two side pieces, *a* hung by pivots, to the posts, *c*. The side piece, *a*, extends upwards some distance, and has a weight or counterpoise, B, which balances the gate upon the pivots. C is a half pulley attached to the side piece, where the pivot passes through. Two ropes, *d*, pass around this half pulley and are attached to the small side rod, *e*, the other ends of the two ropes pass around pulleys, *f f*, which are placed in horizontal arms, D, said arms being secured in upright posts, E; there is an arm and post on each side of the gate. The small side rod, *e*, is attached at its lower end to the latch, *g*, which is pressed into the catch, *l*, by the spring, *h*. At the opposite end of the gate there is a similar latch, *g*, and catch, *l*, said latch having a cord *i*, attached to it, and passing over a pulley, *j* in the upper cross rail of the gate, directly over the latch, this cord passes along on the upper surface of said rail, and passes under a small pulley, *k*, and is there attached to the small side rod. By this arrangement both of the latches, *g*, are relieved from the catches, *l* by raising upwards the small side rod, *e*. F is a horizontal cross piece attached to the gate post, *c*; at the upper end, this cross piece has two catches, *m*, upon it,—one at each end—into which the latch, *g*, is forced by the spring, *h*, when the gate is opened or raised in a horizontal position.

The nature of this invention consists in having the several parts of the gate constructed and arranged so that it may be opened and closed by the driver of a vehicle without the driver leaving his seat. The gate is balanced on its pivots, and the two latches are operated by the two ropes, one at each side of the gate. As the driver approaches the gate he pulls the rope suspended from the arm and raises the gate; when the driver has passed through he pulls the rope on the other side and the gate descends to its original position.

Operation.—Supposing an equestrian or a person in a vehicle approaching the gate—representation of the manner being shown in the engraving—by pulling down the rope the latches are released from the catches, *l*, and the gate being balanced on the pivots by the counterpoise, B, the half pulley, C, will turn, and the gate will be elevated. When the gate reaches a horizontal position, it is retained there by means of a latch, being forced into the catch, *m*, by the spring, *h*. The vehicle or equestrian passes through, and then pulls on the cord on the other side of the gate, which releases the latch from the catch, *m*, when the half pulley turns and the gate descends, and swings into its original vertical position. The gate is operated alike by persons passing in both directions. It is a very convenient gate certainly; this will be at once acknowledged, and it can be made strong and very durable. The gate, as represented, is nearly swung up to its horizontal position, to let the female equestrian pass through.

More information may be obtained by letter addressed to B. E. & Ira Buckman, No. 94 Fulton st., this city.

Improved Coal Sifter for Families.

Ebenezer Oliver, of New York City, has taken measures to secure a patent for an improvement in apparatus for sifting ashes from cinders, which is very convenient and suitable for private families. An outer box is employed, having a sieve or screen, sustained in the box on a bar, and the sieve is moved backwards and forwards in a very simple manner on slats, by the turning of a crank handle; the mode of operating it is exceedingly simple.

Turning Irregular Forms.

On our list of Patents, this week, there is one granted to Charles E. Bacon, of Buffalo, N. Y., for cutting irregular forms and carving surfaces. We have been informed that this is a most excellent invention, and the machine is one of the best ever got up for the purpose; it is stated that it will do work never done by any machine before. In a few weeks, our readers may expect to see it illustrated and described in our columns.

Machine for Forming Leaves of Springs for Carriages.

Messrs. Garret Shepherd, and John J. Reid, of this city, New York, have taken measures to secure a patent, the nature of which consists in bending or forming the leaves of springs for vehicles, by means of dies placed within a suitable sash, which is movable. The dies correspond in shape to that which it is designed to make the leaves. One of them is stationary, and the other movable, the movable one being operated by a rack and pinion. The bar of metal to be operated on is heated and placed upon the upper surface of the lower die, the upper die is forced upon it and bends it to the precise shape. When it is bent, the movable sash to which the dies are attached is lowered, until the leaf operated upon, and which is still between the dies, is immersed in a vessel of water at the lower part of the frame.

The Scotch Reaping Machine.

A writer in the London Times states that the Rev. P. Bell, about whose reaping machine we made a few remarks last week, made one for P. B. Yates, Madison Co., N. Y., America in 1834. If this is so, Mr Yates will be pleased to inform his countrymen here, so that we may know whether the horse power reaper was first produced at home or came over the Big Herring Pond. Mr. Yates, report yourself.

Descent from a Balloon.

Madame Poitevin, a French lady, recently descended from a balloon, near London, by a parachute. This was one of the most daring feats ever performed.

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Scientific American

NEW-YORK, OCTOBER 2, 1852.

Applications of Lightning---Ingenuity of Science.

Strange must have been the reflections of the Roman sentinel mentioned by Cæsar, who first saw the electric flame during the dark midnight watch, gleaming on the point of his lance; and the ancient mariner, too, what singular thoughts must have shot across his mind as he beheld the fire balls (Castor and Pollux) playing on the *main truck*, at the close of a terrific thunder storm. The action of a piece of amber, in attracting a feather, was of old viewed as something. mysterious and belonging to the spirit world, hence it was worn by our superstitious predecessors for amulets of rare virtue. From the depths of the past till A. D. 1618, little was recorded concerning electricity; in that year Dr. Gilbert published his treatise "De Magnette," which revealed to us that in the brave days of old, neither the scholastic Greek nor the learned monk knew aught of the now sublime and wonderful science of electricity. It was not until the days of Franklin that this science made any advances worth mentioning; then Gray and Wheeler discovered that some bodies were conductors, and some were not, and with this knowledge only, Franklin, by one of the most simple and romantic scientific experiments on record, proved the identity of lightning and electricity, by wooing the fluid from a thunder cloud and locking it up forever in the portfolio of science with his iron key. After this, many improvements were made in electrical machines, but practically speaking, electricity was applied to accomplish nothing useful, except it may be a few doubtful cures of diseases, and the amusing but impracticable pith ball telegraph of Lomond—it was merely employed as the toy of the Lecture Room. It was not until 1790 that the grand discovery was made, which has rendered electricity the most ubiquitous handmaid of the arts. Galvani, a professor of anatomy at Bologna, having passed a copper wire through the nerves of a dissected frog and suspended it over an iron ballustrade, was surprised to see its limbs begin to play as if they were alive; an account of this soon reached, Volta at Pavia, and he, with higher powers of mind, pursued the investigations until he discovered that electricity was evolved by the contact of two different metals. In 1800 he made the famous Voltaic Pile, and from that date we can trace a series of the most wonderful and brilliant discoveries and useful applications of electricity. Volta soon saw the importance of his discovery, and at once wrote an account of it to Sir Joshua Banks, of the Royal Society of London. A pile or battery, was soon constructed, and the first fruits of its application was the decomposition of water, and the resolving of it into its original elements—oxygen and hydrogen. It was now successfully applied to chemical analysis, and in the hands of Sir Humphrey Davy the world was soon dazzled with a series the most brilliant chemical discoveries on record. By the old electric machine, powder had been ignited at a considerable distance, but now the Voltaic pile fused the diamond and the most fractious metal, and, with charcoal candles, a light was produced rivalling in brightness that of the solar orb. Here, then, it was usefully applied in chemical investigations, but another power belonging to it was soon to be discovered. In 1819, Oersted discovered that a current of electricity travelling along a conductor, moved a magnet on its axis, and it was then suggested that messages might be carried to distant places on the lightning's wing. The *electro-magnet* (formed by a circuit wire coiled around a piece of soft iron) had yet to be discovered; this was done by Sturgeon in 1825, and afterwards perfected by Prof. Henry, then of Albany, N. Y., in 1829, who was the first person in the world that moved machinery by lightning. It but required the application of these discoveries to move a machine, which, at a distance, would make marks, to produce an effective telegraph, that would carry messages, from lip to lip, hundreds of miles in a few seconds; this was successfully accomplished by Prof. Morse, in 1836. It is singular, that although the principles of the chemical telegraph were well known long before the discovery of electro-magnetism, that these principles were not applied for the same purpose till 1838. In that year there was not a line of working telegraph in the whole world, now the wires stretch over one half of our continent, and there is an electric net work of more than twenty thousand miles in length. In the old world the electric current passes under the waters of the sea, and unites old Albion with old Gaul, old Caledon with old Erin, and it is now proposed to stretch the wires underneath the waters of the Mediterranean, and send the lightning's flash from Europe to Atrica.

In 1838, Jacobi discovered how to make medals and takes copies of objects in metals, by depositing pure metals from their oxyde solutions; from this discovery has arisen that beautiful extensive and wonderful art—"Electro-Metallurgy. The lightning deposits copper on the face of the printer's type; it plates with silver the vase, the wine cup, the fork, the spoon; in short, in this department, it is possessed of the utmost versatility.

It is now employed to move clocks, and the astronomer, in his observatory, records the transit of rolling spheres by flashes of lightning. The adaptations and applications of electricity, are almost past numbering; the steam engine, in the eloquent language of Lardner, "can spin, weave, can make a pin, or forge a massive bar," but in doing this it only exhibits the one quality of pushing by mechanical force, on the other hand electricity has various qualities—it decomposes the hardest metals and re-composes them again from their solutions, into pure, solid, and beautiful forms, according to any pattern presented; it sets the diamond on fire; it rends rocks to pieces at the bottom of the sea; it conveys messages from the stars, and from friend to friend across seas and continents. What the future applications of lightning in the hands of man may be, we cannot tell, but assuredly we can say that since the discovery of the voltaic pile, in 1800—only fifty-two years ago—it has marched on with such rapid and ingenious strides, to subject all art to its dominion, that we are almost prepared for any new and wonderful application of its powers, whether it be in propelling Porter's Balloon or annexing Cuba. We can truly say, that the ingenuity of science, in the useful applications of lightning—electricity—above all other discoveries ever made, afford subjects for wonder, admiration, and thanksgiving.

The Fresnel Light and the Old System.

It was well, we think, for the honor of our country and the benefit of our great and rapidly increasing commerce, that the last Congress changed the old Light-house System, and established a new one upon a far superior basis.

Some years ago a Fresnel lens was purchased in France by our old Light-house Board, but so inefficient and careless was said Board, that, after its arrival here, although it cost $10,000 and was intended for the Iron Light-house on Carysfort Reef, Florida, it was suffered to remain in the New York Custom House, like a corpse, and was laid among the old lumber and unclaimed baggage. At last it was sold for old iron and such-like trumpery, nobody about the Custom House having the gumption to know that such a valuable apparatus was anything more than some wheels, pieces of glass, and so on. It was purchased for $300, and no sooner was this done than up awakened the Rip Van Winkles of the Light-house Board, and a writ of replevin was issued to reclaim it for the Government, as having been sold by a mistake. This led to a long law suit between the purchasers and the blundering officials; but at last it was obtained by government, and has been taken to Philadelphia, where it was exhibited on the 16th ult., at the monthly meeting of the Franklin Institute, by Lieut. Meade, U. S. Navy, who has put it together for the purpose of ascertaining whether or not it was perfect in all its parts. It is stated that those who witnessed the exhibition were almost overwhelmed with the mass of concentrated rays, and were nearly blinded. It is a Fresnel of the first magnitude and perfect in all its parts, excepting a few fractures which can easily be repaired and which were caused by the clumsy application of a crow-bar in opening one of the boxes. It will be set up in the Carysfort Light-house, where it should have been long ago, had our light-houses been under better management. The workmanship is excellent, and all the machinery is beautifully executed.

American Superiority at the World's Fair.

This is the title of a work by Charles T. Rogers, of Louisiana, as an accompaniment to a Chromo-Lithographic Picture, illustrative of the prizes awarded to American citizens at the World's Fair. This plate is the richest work of lithographic art, we believe, ever produced in our country. In the centre is the "Yacht America," with the stars and stripes floating aloft, bowling along so far ahead of all the yachts of the Royal Club, that no second is to be seen. The machines, works of art, and manufactured products, for which prize medals were awarded to Americans, number forty-one; these are all exhibited in this picture, and the handsome volume which accompanies them, gives a full description of each separately. The book has a lithographic likeness of Mr. Edward Riddle, U. S. Commissioner, and it is illustrated with a number of very fine engravings. We believe that Mr. Stansbury was to prepare a work with drawings of the various useful machines, &c., exhibited at the World's Fair, for our Government, but most of the works which have to be prepared and printed under our government superintendance at Washington, are always so far behind the age, in point of time, that before they are printed they have become old and seedy, because all the information they contain generally finds its way to the public long before the government printer has set up the first type. We are therefore much indebted to Mr. Rogers for this book at this particular time; some of his selections of remarks from newspapers we do not think are correct, but they are all spirited and graphic. We all remember what a poor show the American division made with its ill filled squares, in comparison with the departments of other nations, and we know how much "down in the mouth"—to use a common expression—we felt at the beginning of the Fair, on account of this; some quarrels among our countrymen, and the taunting remarks of the "London Times" almost gave us the blues, but the old proverb, "a bad beginning has a good ending," proved to be true as gospel in our case. First Hobbs began and knocked the whole science out of the famous English Bramah and Chubb Locks, and carried off, with a lightsome snap of his fingers, the prize of $1000 in gold; then came the triumph of McCormick's Reaper, and, finally, the Yacht America put on the cap stone of triumph by beating the whole of the Royal Squadron. The American Department which, before that, was visited by few of the visitors, now became quite a lion, and the "London Times," which aforetime had been so bitter, eat up its previous language, and declared that in things useful and of practical utility, America fairly bore the bell at the Great Exhibition. Our country has reason to feel proud of what was done by our countrymen at the World's Fair, but at the same time we do say, that, had the arrangements been made by other hands and heads, than those which made them, at Washington, we would have stood forth at the Great Exhibition in number as well as in the quality of exhibitors—the Model Department—"the Division of the Great Transatlantic Republic." As it is, we are thankful, and those who wish to freshen their memories and feelings with what our countrymen accomplished at the World's Fair, must get this plate and book. It is for sale by Schaller & Maggi, No. 7 Nassau street, N. Y.

Stewart's Rotary Engine.

J. A. Stewart, the inventor of the rotary steam engine illustrated on page 57, Volume 6, Scientific American writing to us from Mitchellsville, Tenn., says, "the experiment of uniting the power of two steam wheels, through the medium of outside wheels, has been successful," and he has three of his engines in that section of country running on that plan. One has been in operation four months, with a cylinder boiler 28 inches in dirmeter, and 32 feet long. It generates steam enough to saw with one of Page's 52 inch saws, 4,000 feet of surface per 12 hours, the slabs, without the saw-dust, making all the fuel required. Another engine of the kind has been applied to grinding. Both of the engines were made at the Eagle Foundry, St. Louis."

He has another engine of the kind which was made in Cincinnati, which run well for nearly four years. To it he also applied outside wheels, and a great improvement has been effected. The backlash has all been done away, and as applied to grinding grain, it operates in a most satisfactory manner.

Barrow's Rotary Steam Engine.

On Wednesday, Sept. 22, at the invitation of Ebenezer Barrows, Esq., we accompanied him on the first trial trip of his new miniature steamboat "Rotary," fitted with his improved rotary engine. The boat is 70 feet long, and the engine cylinder only 30 inches in diameter, and 12 inches in length, with a steam way of only 2¼ inches in depth, or of an area of 27 square inches, and as the steam in this passage acts upon only two pistons at once, the entire surface acted on by the steam is only 54 square inches, or about equal to that of a cylinder 8 inches in diameter. With an average pressure of about 45 lbs. to the square inch, the boat was propelled against a strong head wind and tide at an average rate of about nine miles an hour,—the trip from the Battery to Yonkers and back, about 36 miles, against tide both ways, occupying 4 hours and 5 minutes; the upward passage being against a strong head wind. During a great portion of the trip, the speed was much higher than that we have given as the average made, and must have reached 11 or 12 miles an hour, but owing to the quality of the coal provided, the fire had to be almost entirely withdrawn soon after starting, the fire-bars being so covered with clinkers as to almost entirely stop the draught, and during this time the steam was unavoidably allowed to descend to 22 lbs. On the fire being renewed, the boiler, a very small one, got up steam to 90 lbs., the engine working the whole time, and cold water being continually fed in. We think it necessary, in justice to Mr. B., to state the disadvantages under which his experiment was made. The consumption of coal required to propel this boat is only about 110 lbs. per hour. The engine throughout worked beautifully and regularly, and we do not recollect ever having been in any steam vessel where the vibration was so imperceptible. The room taken up by the machinery is less than that of an ordinary two horse-power engine, so that the economy of space is great. Upon the whole, we think the experiment, especially as a first one, was very successful, and under more favorable circumstances a vastly better result will be accomplished. The engine, notwithstanding the small area of steam surface, has been proven to be capable of propelling the boat with a very low pressure of steam. We are assured by Mr. B. that the friction of the engine is so slight that it only requires a pressure of two and a-half pounds to overcome it and set the engine in motion; this is about one half the friction allowed by engineers. With a large vessel there is no doubt that an extremely high speed could be obtained.

Through the Scientific American Patent Agency, Mr. Barrows has obtained patents for England, Scotland, France, and Belgium, and the patent in this country is ready to issue upon the inventor's order. We are preparing engravings of the Engine, which will appear next week.

Those Glass Dials.

We observe by the Philadelphia papers, that the Councils of that city have made arrangements with Messrs. Sherry & Byram, of Sag Harbor, N. Y., to furnish glass dials for the old State House Clock, otherwise known as "Independence Hall." Each dial will be 7 feet 6 inches in diameter, and composed of one piece of glass. The genius of Mr. Byram is rapidly winging its way, and specimens of his handiwork, in the shape of clocks, dials, &c., will soon be found in all parts of the United States.

Enrollment Papers.

We have in our possession the enrolled specifications of W. Van Anden, A. Chapman, J. H. Tuttle, and E. Barrows, English patents.

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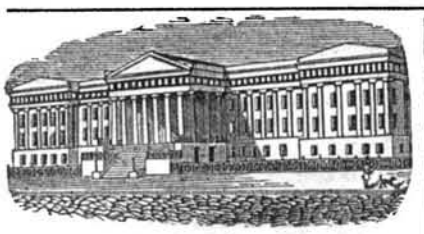

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office.

FOR THE WEEK ENDING SEPTEMBER 21, 1852.

ALARM TIME PIECE FOR LIGHTING LAMPS—By Wm. H Andrews, of Cheshire, Ct., and R. T. Andrews, of Plymouth, Ct : We claim the use of a revolving vertical section of a cylinder, when combined with a spring to revolve it, when these are combined with the appropriate levers, and connected with the alarm wheel of an alarm time piece, by an appropriate connecting rod, for the purpose of lighting a lamp, in connection with the alarm given by an alarm time-piece, when the whole is constructed, combined, and arranged, substantially as described.

TUNING PEGS FOR GUITARS, &c.—By James Ashborn, of Wolcottville, Ct. : I claim making the tuning pegs of guitars, and other like stringed instruments, with the journal part of a much greater diameter than the barrel on which the string is coiled, substantially as specified.

CARVING MACHINES—By C. E. Bacon, of Buffalo, N. Y.: I claim the folding frame and wheels, or pulleys, constructed substantially as described, in combination with the double cross sliding ways, and vertically sliding cylinder or tracer, for the purpose of tracing from patterns, or other device, in the manner specified.

COATING IRON WITH COPPER—By T. G. Bucklin, of Troy, N Y.: I claim, first, coating cast malleable or wrought-iron with copper, or any of the alloys of which copper forms a part, by employing a coating of zinc, or zinc and tin, to cover the iron, as a positive medium to make the molten copper, or its alloy, adhere to the iron, in the manner substantially as described.

Second, I claim the employment of an infusible or partially infusible substance, or substances, especially the fluoride of calcium, as a wiper and non-conductor, as set forth.

HAND DRILLING MACHINE—By Reuben Daniels, of Woodstock, Vt.: I claim the combination of the geared mandrel, which elongates to feed the drill, with the arm that projects from the sleeve, to steady the gearing, and the slot in the stock, to guide and steady the arm, while traversing therein, to permit the drill to be advanced and withdrawn, as set forth

HORSE COLLARS—By J. H. Hall & John Lowrey, of Wheeling, Va.: We claim the construction and arrangement of the two sides of the collar, so that they fit together, and can be moved towards and from each other by a parallel motion, to diminish or enlarge the aperture for the horse's neck, and then be fastened by a set screw, or its equivalent, to form a rigid frame, substantially as described.

PORTABLE WARDROBES—By S. L. Hobart, of Hingham, Mass. : I claim a wardrobe susceptible of dismemberment with the parts held together, by means of the sliding bolts, which fit into sockets, and the notched studs which fit into the grooves, the top piece preventing the back from slipping by the bolts, and the sides being prevented from slipping by the projecting pieces, which press the braces forward, and keep the studs pressed forward, as described.

MACHINERY FOR BEVELLING THE EDGES OF SKELPS OR METALLIC STRIPS, etc.—By R. Knight, of Cleveland, O. : I claim arranging the rollers in the frame, so as to receive a lateral movement, as may be desired, in other words, giving the rollers end play, one over the other, as thereby increasing or diminishing the distance between the bosses, according to the width of the plate or strip, and providing suitable means for retaining the same in place.

RAKES—Amza B. Lewis, of Brooklyn, Wis. : I claim the combination of the slotted swinging arm, with the slotted rake handle and crank, as described, for moving the cut grain from the platform.

PAPER CUTTING MACHINES—By James E. Mallory, of New York City : I claim the arrangement of the movable platfo m and sliding clamp, as described, in combination with the vibrating knife, as described.

CRAYON RUBBER—By D. F. Pond, of New Haven, Ct. : I claim the crayon rubber, made in the manner set forth, for the purpose of applying and blending the crayons in the bichromatic and other kindred styles of drawing.

FREE JOINT TUBE—By Richard Prosser, of Birmingham, England (assignor to Thos. Prosser, of New York City.) Ante-dated May 31, 1852 : I claim the application of the improved metal tube, made in the manner and for the purposes described, that is to say, of a metal tube with a free joint, neither welded nor brazed, to boilers of steam engines or other vessels requiring metal tubes of such a character as to resist external pressure effectually.

GALVANIC CLOCKS—Moses G. Farmer, of Salem, Mass. (assignor to himself and Chas. C. Coffin, of Boscowen, N. H.) : I claim the combination of the impulse spring and the pallets, respectively connected with the armature of the magnet and the pendulum, and made to operate together, and to make the pendulum operate or impart impulse to it, substantially as described.

DESIGNS.

CAMERA STAND—By W. A. Allen, of New York city.

WIRE FENCE—By Francis Kilborn, of Lancaster, Pa.

COOKING STOVE—By Orin W. Andrews, of Providence, R. I. (assignor to Isaac Backus, of Canterbury, Ct., and J. P. Barstow, of Norwich, Ct.)

Bird Killed by a Telegraph Wire.

A small bird, of a species unknown to us, was brought to us, says the Pittsburg Union, by a friend, it having been killed on the telegraph wire, near St. Mary's Cemetery, beyond Lawrenceville. The bird alighted on the wire at a spot where a connection had been made by wrapping or twisting, in the usual manner, one end of the wire being left pointed upwards, on which the bird sat. Almost instantly it was observed to fall. The gentleman who noticed this, went to the bird and picked it up. In its breast he found an oblong punctured hole, from which the blood was flowing, large enough to admit a small sized pea, which had doubtless been made by the passage of the electric fluid from the point of the wire into the breast of the bird, thereby causing its death.

Recent Foreign Inventions.

MANUFACTURE OF PAPER FROM BARK.—Jean Theodore Coupier, and Marie A. C. Mellier, of Maidstone, Eng., Patentees.

The first part of this invention consists in manufacturing pulp for paper-making from straw and other similar vegetable matters, and from the bark of the osier or chestnut-tree, by the use of a boiling solution of hydrate of soda or potash, in conjunction with other chemical means, and without mechanical operations.

The patentees conduct their processes as follows:—They make use of an open vessel with a perforated false bottom, on which are placed the materials to be operated on, previously cut or otherwise divided into short lengths. From the top of this vessel (which is to be closed while the operation is proceeding) a pipe leads to a second vessel capable of holding from 60 to 70 gallons, in which is placed the alkaline solution, and which is employed at a strength of from 7° to 10° Baume. The end of the pipe in the first vessel is provided with a rose-head. When the process is to be commenced, steam is to be turned on into the alkaline solution, and its temperature raised to the boiling point. An excess of steam is then admitted, and the solution forced through the pipe, and dispersed in a shower over the straw; when the solution is exhausted in this way, a fresh supply is introduced, and this operation repeated. A communication is established between the vessels by another pipe from underneath the false bottom of the first, and a circulation of the heated liquor is thereby maintained for about eight hours. Hot water is then forced through, and this washing is continued until the liquor comes off of a strength of about 1° Baume. Cold water is then supplied to the materials, and passed through until it comes off clear. In order to bleach and disaggregate the fibres, they are then submitted to the action of a solution of hypochlorite of alumina or other hypochlorite, of a strength of about 3° Baume, and again washed in hot water in order to remove the superfluous bleaching liquid. This reduces the mass to the condition of half stuff which is manufactured into paper according to the usual modes operating with or without the addition of rag pulp. The quantity of alkaline solution consumed by the above process will be about thirty to forty gallons for every hundred weight of fibre, and of hypochlorite about 25 per cent. of the weight of fibre. The hydrate for the alkaline solution may be obtained by dissolving soda or potash in lime water, and decanting the clear liquor; and the hypochlorite of alumina for the bleaching process by dissolving sulphate of alumina in a solution of hypochlorite (common chloride) of lime. The waters obtained by the first process when evaporated, yield a resinous soap, which may be mixed with other materials, and burnt as fuel, or used in the unmixed state.

The above process is applicable also to flax waste, cotton waste, hemp, tow, &c., but does not supersede the necessity of first converting these materials into half stuff.

The second part of the invention consists in treating wood shavings (pine, ash, elm, and beech are suitable for this purpose) with nitric acid in order to obtain therefrom a pulp to be used in the manufacture of paper.

In carrying this part of the invention into effect, the patentees employ two vessels in connection with each other, having perforated false bottoms on which the shavings to be operated on are placed in a damp state, and pressed. About 80 per cent. by weight of white nitric acid (of a strength of 36° Baume) diluted to about 5° or 6° Baume, is then added to the shavings in one of the vessels, and after standing about four hours, heat is applied until ebulition commences, and nitrous fumes are evolved. These fumes are caused to pass into the second vessel, where they come in contact with the damped shavings, and are partially converted into hyponitric acid. When the boiling has been continued for a sufficient time, the shavings are subjected, for about two hours, to the action of solution of hydrate of potash or soda, of a strength of about 2° Baume, in the manner before described, are washed, and they are then bleached by hyphchlorite of alumina, using, however, only about two per cent. by weight of the materials in making the solution. This last operation, with the aid of subsequent washings, converts the shavings to a state of half stuff, which may be used alone or with rag pulp, according to the usual methods. The acid liquor employed in operating on the first batch of shavings, after having about 40 per cent. of the weight of the materials added to it, is used for treating another quantity, the nitrous fumes evolved being applied as before described. By evaporating the used acid liquors, oxalic acid may be obtained, as well as an acid of a character analogous to nitropieric acid.

Curious Experiment in Wool Growing.

In a lecture recently delivered by Mr. Owen at the Society of Arts, the learned professor detailed the particulars of a highly interesting experiment, which resulted in the establishment of one of the very few instances in which the origination of a distinct variety of domestic quadruped could be satisfactorily traced, with all the circumstances attending its development well authenticated. We must premise it by stating that amongst the series of wools shown in the French department of the Great Exhibition, were specimens characterized by the jury as a wool of singular and peculiar properties; the hair, glossy and silky, similar to mohair, retaining, at the same time, certain properties of the merino breed. This wool was exhibited by J. L. Graux, of the farm of Mauchamp, Commune de Juvincourt, and the produce of a peculiar variety of the merino breed of sheep, and it thus arose :—

In the year 1828, one of the ewes of the flock produced a male lamb, which, as it grew up, became remarkable for the long, smooth, straight, and silky character of the fibre of the wool, and for the shortness of its horns. It was of small size, and presented certain defects in its conformation, which have disappeared in its descendants. In 1829, M. Graux employed this ram with the view to obtain other rams, having the same quality of wool. The produce of 1830 included one ram and one ewe, having the silky quality of the wool; that of 1831 produced fours rams and one ewe with the fleece of that quality. In 1833, the rams, with the silky variety of wool, were sufficiently numerous to serve the whole flock. In each subsequent year the lambs have been of two kinds—one preserving the character of the ancient race, with the curled elastic wool, only a little longer and finer than in the ordinary merinos.

The other resembling the rams of the new breed, some of which retained the large head, long neck, narrow chest, and long flanks of the abnormal progenitor, whilst others combined the ordinary and better-formed body, with the fine silky wool. M. Graux, profiting by the partial resumption of the normal type of the merino in some of the descendants of the malformed original variety, at length succeeded, by a judicious system of crossing and interbreeding, in obtaining a flock, combining the long silky fleece with a smaller head, shorter neck, broader flanks, and more capacious chest. Of this breed the flocks have become sufficiently numerous to enable the proprietor to sell examples for exportation. The crossing of the Beauchamp variety with the ordinary merino has also produced a valuable quality of wool, known in France as the Mauchamp Merino.

The fine silky wool of the pure Mauchamp breed is remarkable for its qualities, as combining wool, owing to the strength as well as the length and fineness of the fibres. It is found of great value by the manufacturers of Cashmere shawls, being second only to the true Cashmere fleece in the flexible delicacy of the fabric, and of particular utility when combined with the Cashmere wool in imparting to the manufacture qualities of strength and consistence, in which the pure Cashmere is deficient. Although the quantity of the wool yielded by the Mauchamp variety is less than in the ordinary merinos, the higher price which it obtains in the French market—25 per cent. above the best merino wools—and the present value of the breed, have fully compensated M. Graux for the pains and care manifested by him in the establishment of the variety, and a council medal was awarded to him.

The Koh-i-Noor.

This celebrated diamond, which created such a sensation for a period in the Great Exhibition, was found to be very improperly cut, and did not exhibit half of its beauty. Consultation with the Queen, Prince Albert, and eminent scientific men were had, to see if it could not be safely re-cut and improved. All the diamond cutting in the world, it seems, is done in Holland, by eminent and long practiced lapidiaries, and the most famous of them a person of the Jewish persuasion, was sent for, and consulted about the safety and certainty of cutting the famous "Mountain of Light." He decided that it could be done, and he was forthwith employed to do it.—With another artizan he erected his machinery some time ago, and commenced his tedious, tender, and peculiar operations. By late news from Europe we learn he concluded his labors on the 7th of last month. Two small diamonds were cut from the large one, and all properly polished with diamond dust. It is now unsurpassed by any diamond above the ground in shape, lustre, and beauty. The large gem having left the hands of the artizans employed for the purpose, they have received from the hands of their employer, Mr. Garrard, the Queen's jeweller, a piece of silver plate, with a model of the Koh-i-Noor in the centre, and bearing the following inscription :—"Presented by Mr. Garrard to Mr. Fedder and Mr. Voorzanger, in commemoration of the cutting of the Koh-i-Noor. Commenced on the 16th July, and finished on the 7th September, 1852,"

Prevention of Salivation.

"I wish to communicate a fact to you that has recently fallen under my observation, which may be of some interest to the profession generally. All physicians are aware of the salivating effect of calomel, and of the inconvenience that arises from sore mouths and other irritating complaints that affect the patients. I have had several persons under my care, to whom I have been obliged to administer calomel, which I have mixed with supercarbonate of soda, in the proportion of about twice the amount by weight of soda. To one patient in particular, whom I have attended for about ten weeks, I have given three grains of calomel with six grains of soda daily for five weeks, besides administering it frequently during the rest of the time. As yet he has not suffered at all from the salivating effect of the calomel, which has nevertheless been very beneficial to him. Is it possible that these were all persons not susceptible to salivation? Or is the absence of salivation to be attributed to the supercarbonate of soda." DR. STEARNS.

[Charleston Mercury, S. C.

Girdled Trees.

A correspondent of the Genesee Farmer says that girdled trees may be preserved by the following means :—

"Take out a block of wood extending above and below the girdle, and take from the body or limb of another tree a block corresponding in size and shape, with the bark on, and adjust it in the place, and bind it there, on the principle of engrafting." This plan, it is said, has proved entirely successful.

Hemp.

The law recently passed by Congress, requires that all hemp carried on board steamboats, shall be baled and covered, thus giving additional security against fire on board of boats.

In the course of forty-eight hours, closing with Sunday, September 26, the extraordinary amount of 4,939 emigrants arrived at this city, in seventeen passenger vessels, from foreign ports. All but 5,000 emmigrants in 48 hours. As Dominie Sampson would say, "Prodigious."

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TO CORRESPONDENTS.

A. C., of N. H.—Endless saws are not new; they have several times been proposed to us, and we have seen models of two or three within the past five years.

R. A., of Me.—Ice contains 140 degrees of latent heat, and when two pieces are rubbed together some of this latent heat is made sensible and melts the ice; friction always excites latent heat.

S. C., of N. Y.—We think there is something in your invention which is patentable, but cannot so fully determine without a model. You had better send us one on a small scale.

J. M., of Ala.—There is nothing new in toggle jointed lever presses; we have been familiar with presses of this description for many years.

W. H. W., of Ohio—It is doubtful about your being able to obtain a patent for the employment of weights to operate a churn; springs have been used for this purpose, and are equivalents of weights. If you have any peculiar method of doing it, a patent could be secured on it. To judge of this we shall require a sketch and description.

M. F., of Ga.—The idea of using air tubes for transporting mails from one station to another is not new; it has many times been proposed.

F. L. D., of N. Y.—Yours has been received and we shall give it attention.

D. McA., of Phila.—Yours upon "Iron Steamers" is received; we decline publishing it.

S. M., of Pa.—We have no Nos. 1 and 15, Vol. 5, to furnish you.

J. P M., of Mass.—Your model is received, and the papers will be executed as soon as we can reach the case in the ordinary progress of our business.

C. A. R., of Texas—We think your turning lathe is new; you had better make experiments with it on shoe lasts, spokes, and gun stocks.

S. L, of N. Y.—We have received both of your letters; we cannot see why there should be any dispute about the atmospheric engine; the sketch presents a rotary engine of a form not unknown to us, but how are you going to apply the atmosphere to work it? It can be operated by steam, water, or hot air, but steam would be the most economical.

S. W. H., of Ind.—To judge your case by others in the same line we confidently predict that you would not realize any profit of your machine for adding figures; other ingenious contrivances for this purpose are as a dead letter, no demand being made for them.

D. D., of Ill.—We do not see any chance for a patent on your roofing; the same plan has been exhibited to us before.

X., of N. Y.—We were amused and delighted with your fable; it is truthful and witty; it is better not to publish it, however, from motives which would, if known, be perfectly satisfactory to you.

J. B. S., of Tenn.—Letter postage would be charged on a newspaper where both ends were covered with the wrapper.

D. D., of Pa.—Your plan of construction for car wheels and axles is well known, and could not be patented. To allow one wheel to play loose on the axle is found to increase the liability of throwing the cars from the track.

W. P. Y., of N. Y.—We think your Distance Measurer may prove to be new. The sketches and description, however, are very imperfect, and do not convey an intelligible view of the contrivance.

F. B. C, of La.—The Fair of the American Institute opens on the 5th Oct. The Industrial Exhibition building will not probably be commenced before about the middle of November.

N. A., of Mass.—The principle embraced in your method of blasting rocks is the same as Maillefert's, viz., the use of water for pressure. Its application is new but of doubtful utility It cannot produce, we think, any favorable result on solid rock, and must be more expensive than drilling.

E. F. P., of Mass.—There are agents in Washington who issue monstrous circulars, and avail themselves of every opportunity to annoy inventors and patentees with them. You would suppose them to be, from their length and general appearance, a treatise on geography, and from the reading it would be difficult to decide what is intended. A long harangue about patent agents, appeals, examinations, etc. We advise inventors to pay no attention to such influences or appeals.

J. R., of N. C.—We will attend to your order immediately, the machine has been liked wherever it has been tried.

S. C., of Pa.—The tarnish of copper is caused by its oxidation, that is, the oxygen of the air combines with the surface of the copper, and instead of rusting, it covers it with a dark tarnish.

A. J., of Conn.—Plumbago is a chemical union of carbon and iron, in the following proportion:—91 parts carbon, and 9 iron. But the black lead sold in shops is a mixture of charcoal and iron filings.

S. H. W., of Miss.—We execute specifications and drawings and attend to applications for letters patent in the United States and all foreign nations. Great Britain, France and Belgium especially receive attention.

S. S. B, of Va.—If we knew the quantity of water applied to your wheel per second, we could tell you the power of the wheel. The power is according to the quantity and height of fall. It requires five horse power to drive one circular saw. Your wheel, we think, will drive the circular saw.

G. T., of N. Y.—We have never seen a boiler so constructed as to take up all the heat of the fuel and reduce it to 210 degrees. If it was the case, there would be a loss, as you say, between using the high and low pressure, in respect to the duty of the fuel.

J. E. C., of R. I.—You will run some risk in making an application on the car seat; a combination, however, of the spiral spring, cylinder, and piston, might be successful. You are correct in regard to Bissell's Spring. The spiral in yours might be regarded as the entire equivalent of an air spring.

C. J. C., of N. Y.—The plan you propose for ventilating cars has been several times offered to us within the past six months; substantially the same arrangement was submitted by J. H., of Ohio, to whom we replied in No. 47, Vol. 7, Sci. Am.

Money received on account of Patent Office business for the week ending Saturday Sept. 25:—

A. E. B. of N. Y., $30; T. McC., of Ohio, $15; G. P., of Md., $20; C. W. C., of Ohio, $30; R. C. B., of Ill., $300; J. R., of N. Y., $30; P. C., of Mo., $5; E. B., of N. Y., $458,35; H. T., of N. C., $55; M. & B., of N. Y., $30; J. C. H., of N. Y., $53; P. O'Neil. of N. Y., $55; D. D., of N. Y., $10.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Sept. 25:

G. P., of Md.; M. & B., of N. Y.; W. A. A., of N. Y.; S. T., of Mass.

Back Numbers and Volumes.

In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

Of Volumes 1, 2 and 3—none.
Of Volume 4, about 20 Nos.; price 50 cts.
Of Volume 5, all but 4 numbers, price, in sheets, $1.
Of Volume 6, all; price in sheets, $2; bound, $2,75
Of Vol. 7, all; do do do

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office;—stating the name of the patentee, and enclosing one dollar as fee for copying.

Patent Laws, and Guide to Inventors.

We publish, and have for sale, the Patent Laws o the United States. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. Price 12 1-2 cts. per copy.

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☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

BAILEY'S SELF-CENTERING LATHE—The best in America for Chair Stuff, Wagon Thills, Rake, Fork, Hoe, and Broom Handles. Persons wishing this Lathe, warranted to do twice the work of any other lathe, by applying to L. A. SPALDING, Lockport, N. Y., can be supplied. The following certificate of Birge & Brother, extensive chair manufacturers, at Troy, N. Y., is to the point:—

"After making a perfect and thorough trial of Bailey's Self Centering and Self-Adjusting Lathe, we can cheerfully recommend it as in every way calculated to perform its work in the best manner—as it is the best Lathe we have ever used in our manufactory; and having used many different kinds, we feel safe in asserting that it is probably the best machine of the kind in use. BIRGE & BROTHER. Francis Miller, Lucius Foot, Turners for B. & B." 3 3m

IRON FOUNDERS MATERIALS—viz.: American hard white and grey Pig Iron; No. 1 Scotch Pig Iron Iron and Brass Moulding Sand; Fire Sand and Fire Clay; Core Sand and Flour. English and Scotch patent Fire Bricks—plain, arch, and circular, for cupolas. Pulverized Soapstone and Black Lead. Sea Coal, Anthracite and Charcoal Foundry Facings of approved quality, always on hand and for sale by G. O ROBERTSON, office 135 Water street, (corner of Pine), N. Y. 3 6*

TAKE NOTICE—Ten Dollars, forwarded to the subscribers, will insure one copy, bound complete, Outlines of American Machinery, containing 17 finely executed Plates, of the best models; also 18 folio pages of descriptive text. H. S. SAMUELS & CO, 8 Park Place. N. B.—8 Nos. now ready of the celebrated Treatise on American Engineering. Price $1, paper. 3 1*

WOODWORTH PLANING MACHINES, on hand and manufactured to order, of superior quality, at reduced prices, wa ranted perfect. Also steam engines and other machinery, by JOHN H. LESTER, 57 Pearly street, Brooklyn, L. I. 3 4*

FURNACES, &c.—Will be sold at public auction, on the 12th day of October next, at 12 o'clock, M, if not previously disposed of at private sale, all the furnace property lately belonging to and occupied by David C. Green, in the manufacture of cast Butt Hinges and other hardware, situated in Providence, R. I., consisting of two lots of land, 60x100 feet and 50x120 feet; two 2 story buildings used for finishing and packing; one building of one story, 37x100, used for melting and moulding; one dwelling house and other buildings, together with machinery and tools in said buildings used in the aforesaid manufacture, viz.: one 8 horse-power engine and boiler, shafting, belting, cupola, blower, annealing furnace, lathes, drills, anvils, vises. grindstones. flasks, both iron and wood, patterns for butts and other hardware, all in complete order. The above property will be sold low at private sale previous to the 12th proximo. Apply to L. GREEN, at Weybosset Bank, Providence, R. I., or to DAVID C. GREEN, at the store of C. B. Conant & Co., 215 Pearl street, New York. 3 2*

TO PRACTICAL SURVEYORS—"Industrial Home Association No. 3"—Sealed Proposals will be received on and after Tuesday Sept. 28, until Friday the 8th day of Oct., 1852, at 4 o'clock P M., for surveying and laying out into streets, quarter acre plots, &c., 464 acres of land at Wakefield, half a mile from William's Bridge, Westchester Co., N. Y. Plan and specifications can be seen, and all information relating thereto can be obtained on application to Wells & Cochrane, builders, 80 Avenue B. The Executive Committee reserve the right of rejecting any proposals they may deem unsatisfactory. Proposals to be addressed to J. W. LINSTED (marked "Proposals for Surveying," &c), 80 Avenue B. 1*

TO MANUFACTURERS OF WOOL—CHAFFEE S DRYING MACHINE, or Hydro Extractor, is worthy of the attention of all who have wool, cotton, or their fabrics to dry by artificial heat. These machines, on account of their superiority over others of like nature, will doubtless supercede them, being more durable, efficient and cheap. All orders addressed to CHAS BURNHAM, Springfield, Mass., will meet with prompt attention. 1*.

EZRA BIRCHARD, of Yorkville, Wisconsin, has been appointed by Wm. McCord, and his assignees, Agent for the sale of McCORD'S Patent Kaolin Soap," in and for the States of Illinois, Michigan and Wisconsin. Particular information can be had on application to WM. McCORD, 141 Sullivan street, New York. 2 2*

BLACK LEAD CRUCIBLES, and all kinds of melting pots, of superior quality, made to order and warranted equal to any of the kind made in the United States, by D H. PURINTON, Somerset, Mass. All orders promptly fulfilled. 2 10*

ENGINE AND BOILER for sale, seven-horse power; the Engine is new, the Boiler has been used about one year—both are in excellent condition. We will put it on ship board for $500. Address MUNN & CO.

FALES & GRAY (Successors to TRACY & FALES), RAILROAD CAR MANUFACTURERS—Grove Works, Hartford, Connecticut. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly. 1tf

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

IMPORTANT TO SOAP MAKERS—Letters Patent of the United States having been issued to Wm. McCord on the 27th of July, for a valuable improvement in Soap, all manufacturers, venders, and users are hereby cautioned against the use of Kaolin, or other equivalent aluminous minerals, combined with ammonia, as they will, by so doing, infringe this patent, and subject themselves to prosecution. All the necessary fixtures for making 2000 lbs. per day, will cost not to exceed $75; two persons only required to attend the manufacture. Rights to manufacture this the most valuable soap, are offered for sale on reasonable terms. Apply to WM. McCORD, 141 Sullivan st., N. Y. 47tf

A RARE CHANCE—TO MACHINISTS—Assignee's sale of Machinists' Tools: these tools have been in use about four months, and consist of Planers, Lathes, Drill Presses, and Universal Chucks, which are for sale from 20 to 25 per cent. less than cost. For particulars address (post-paid) JOHN PARSHLEY, New Haven, Ct. 49tf

SHERRY & BYRAM'S AMERICAN CLOCKS, FOR CHURCHES, PUBLIC BUILDINGS, RAILROAD STATIONS, &c. REGULATORS FOR JEWELLERS, and other styles, designed for Banks, Offices, etc., also Astronomical Clocks. The undersigned have introduced such improvements in the construction of their clocks, as to be enabled to warrant them the most durable and accurate (highest grade to vary less than two minutes in twelve months), of any others now in use. Glass dials for illumination furnished at short notice. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island, N. Y.

"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American.

"Mr. Byram is a rare mechanical genius." [Jour. of Commerce. 41 7eow*

CHAS. W. COPELAND, Consulting and Mechanical Engineer, Surveyor of Steam Machinery, &c., No. 64 Broadway, N. Y., superintends the construction of steam vessels, steam engines, and machinery of every description; specifications and contracts prepared; also general plans and drawings in detail furnished. Steam engines surveyed and valued, and condition reported. Mr. C. also acts as agent for the purchase and sale of steam vessels, steam engines, boilers, &c. Steam and Vacuum Gauges, Indicators, Sewell's Salinometers, etc, etc., on sale. 50 5eow*

IMPORTANT TO IRON FOUNDRIES—The Galvanic Alloy Manufacturing Co., Nos. 401, 403, and 405 Cherry st., N. Y., will furnish the Aerostatic Fan Blower at $55, and with patent fitting at $65, that produce sufficient blast for the largest cupola, melting 3 and 4 tons of iron per hour; taking less than one half the power of those now in use, that cost from $80 to $100. The wings, being only about an inch in width (planned upon entirely new and mathematical principles), produce double the blast with half the power of other blowers. Warranted in all cases, or they may be returned and the money refunded. 38 eowtf.

BEARDSLEE'S PATENT PLANING MACHINE, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 23tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 1tf

MECHANICS' INSTITUTE CLASSES—Classes in Architecture, Mechanical, Ornamental, and Perspective Drawing: also in Ornamental and Figure Modelling, Geometry, and Algebra, will be commenced at the Rooms of the Institute, corner of Bowery and Division st., on Monday evening, Oct 4th, 1852. The course will consist of 20 lessons. Terms, $4; to Members of the Institute $1 per term less. Further information may be obtained from the Actuary, at the Rooms. from 10 A. M. to 10 P. M.

JOHN T. FISHER, PETER GRANT, JOHN LOUDON—Committee. 51 5*

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting. 45tf P. A. LEONARD.

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 lbs., price $600. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 39 26*

PAINTS, &c. &c.—American Atomic Drier Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.

QUARTERMAN & SON, 114 John st., 1tf Painters and Chemists.

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO. At this Office.

HARRISON'S PATENT GRIST MILL—The best in the world. There are hundreds of the mills now in use, which are justly acknowledged to be unequalled by any others, for large flouring establishments as well as for farmers' use, to be driven by horse-power. They will grind more grain with a given amount of power, will heat the meal far less, and require but half the sharpening of other mills. Patent rights for California and the Western States, and the mills also, are for sale at the corner of Court and Union streets, New Haven, Ct, by 16* EDWARD HARRISON.

DRAWING BOARDS—Patent; 23 by 29 inches, with extensive Scales and Sheet Fastener. Descriptive Circulars sent on application; $10 for Board and T Rule. Sent by Express Address, postpaid, CHAMBERLIN & CO., Pittsfield, Mass. 50tf

CAUTION—Whereas, certain persons are manufacturing and selling Fan Blast Separators, or Winnowing Machines, which infringe upon my patent, which was issued on the 8th day of April, 1851. This, therefore, is to caution all persons against purchasing any right or privilegas of any person whose machine conflicts with mine, as set forth in my Letters Patent, whether their machines have been patented subsequent to mine, or not covered by Letters Patent, as I shall hold every trespasser of my rights to strict account. Any person holding powers of attorney from me, which have not been legally recorded, are cautioned against disposing of territorial rights, or manufacturing and selling machines, and the public are likewise cautioned against purchasing rights of such persons. J. L. BOOTH, Patentee, Cayuga Falls, Ohio. 50 5

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11 1y

NEW HAVEN MANUFACTURING COMPANY, Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinist's Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts, to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Co are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 12 Platt st., New York, S. C. HILLS, Agent N. H Man'g Co. 45tf

TO STEAM ENGINE BUILDERS, OWNERS, and Engineers.—The subscriber having taken the agency of Aschroft's Pressure Gauges, would recommend their adoption to those interested. They have but lately been introduced into this country, but have been applied to many of our first-class river and ocean steamers, and on many railroads, on all of which from their simplicity, accuracy, and non-liability to derangement, they have given the utmost satisfaction. CHAS. W. COPELAND, Consulting Engineer, 64 Broadway, N. Y. 50 5*

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SCIENTIFIC MUSEUM.

Heat of the Sun.

M. Secchi, of Rome, has made a series of photometric experiments on the disc of the sun, by means of a thermo-electric pile. He has found that the heat of the borders of the disc is nearly half that of the centre, which confirms, as regards radiation of heat, what was already known tor light and chemical action. But he observed further, that the heat was not the same at all points equi-distant from the centre; and that the place of maximum temperature was 3′ above the centre; the isothermal curves were a species of parabola. The sun's surface differs in temperature not only because of the absorption due to its atmosphere, but also from certain inherent differences in the surface itself. But M. Secchi also remarks that at the time of the observations, the 20th, 21st, and 23d of March, the solar equator was raised about 2′·6 above the centre, and hence the inferior part of the disc presented the south pole of the sun, while the north pole was concealed; and, moreover, the ascertained point of its greatest heat lies in the equator. The conclusion therefore follows that the equatorial regions of the sun are hotter than the polar. M. Secchi's observations did not extend to the spots of the sun; yet in a few trials they were found to produce a sensible diminution of temperature. He says that the prevalence of the spots about the equatorial region corresponds well with the view that this part is the hottest in the sun.

A Singular Freak of Nature.

The editor of the Charleston Mercury says that he was visited a few days since by a gentleman named R. H. Copeland, native of Lawrence District, S. C., but now residing in Hard Co., in that State, who presents in his peculiar organization a very remarkable natural phenomenon. His right arm, hand and leg, are infected in a manner as to exhibit in every movement the nature and motion of a snake. The arm affected is smaller than the other, its muscular developments different, sensation much less acute, and its actions altogether beyond the control of his will. The motion of the arm seemed to be impelled by a separate and distinct volition, or an instinct entirely its own. The character of the movement is shaped to a considerable extent, by external circumstances, at any sudden noise, startling appearance, or the like, the arm sometimes forms itself into a coil—the hand starting out from the coil as if in the act of striking, at other times the arms and hand have the movement of a snake under full headway making its escape, preserving the peculiar tortuous motion of the reptile. At such times the rapidity of the motion is truly astonishing. The action of the affected parts is continuous. The muscles are never at rest, though sometimes the action is less than at others. The right eye has a snakish look that is not seen in the lett, and the formation of the teeth is very striking. On the left side of the mouth, both in the upper and lower jaw, the teeth are well formed and regular, while on the right side, above and below, they are extremely irregular and fang-like.

Mr. C. is now 46 years of age, and has been thus affected from the time of his birth. He is one of those curious cases which sometimes occur, in which the effects of intense fright with the parent are seen in the unnatural organization of the offspring.

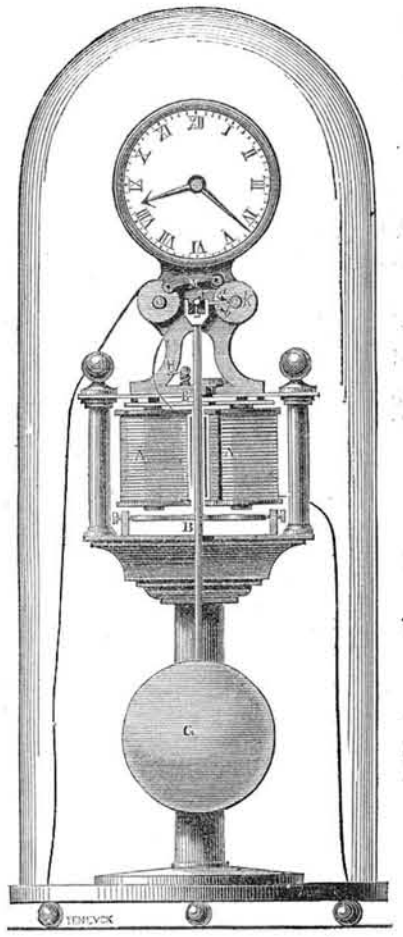
[This is about as good a snake story as any we have ever read.

Iceland Moss.

A lichen, occasionally employed in invalid-diet, to form a jelly which possesses certain tonic and nutritive properties. In the sterile island, whose name it bears, it is however an important article of food, as a substitute for wheat-flour. It is washed, dried in the sun, and reduced to powder, by stamping in strong bags, after which it only requires sifting to make it applicable to the ordinary purposes of meal or flour. The plant consists of upright leaves, of the peculiar membranous texture common to lichens; these are soft and pliant when moist, but rigid and brittle when dry. The organs of fructification are sprinkled over the exterior surface like small black warts, and the edges of the leaves are fringed with short hairs. The whole plant is smooth and shiny, and inclines to a reddish hue towards the roots.

Electro-Magnetic Clock.

FIG. 1.

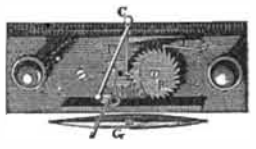


The accompanying engravings and description are translated from Gardisal's "L'Invention Journal," Paris. The inventors are C. Detouche and B. Gobert, of that city.

Figure 1 is an elevated section, and fig. 2 is a small transverse section, taken near the top. The same letters refer to like parts.

A A is an electro magnet; B is a movable piece, carrying the pendulum, G; this pendulum gives motion to the handle on which is fastened the spring, H, the end being so arranged, that at each revolution it strikes the rod thereby giving motion to the pendulum. The movable piece, B, is retained in its place by a spring, not shown. The pendulum rod, F, is fastened to the plate, J, by a piece of thin steel, which springs just enough to allow it to oscillate. On the top of the rod there is a small copper pin, the end of which plays between two small pins, *a b*, placed upon the wheel, *k*. The pin, *a*, is made of ivory, the one, *b*, of copper. Upon the wheel, *k*, there is

FIG. 2.



a small friction roller, M, to augment the friction of wheel, *k*, as it moves from right to left. The plate, J, and the axles of the wheels on each side, are isolated from their supporters by ivory. The pendulum receives a uniform motion as follows: An electric current is communicated by the magnet, A A, to the axles of the two wheels, and another current is communicated to the plate, J. When the small pin on the upper part of the pendulum rod comes in contact with the metallic pin, *b*, the electric circuit is closed, the magnetic action then takes place, the movable piece, B, is attracted and the pendulum throws the spring, H, backwards. Upon its return the pin on the top of the rod of G, comes in contact with the ivory pin, *a*, the circuit is broken, the magnetic force ceases to act, and the spring, I, fig. 2, drawing the movable piece, B, by the pendulum, the rod, D, forces the spring, H, to strike against the pallet of the escapement. This little shock, which is received at each oscillation of the pendulum, is sufficient to keep up a uniform movement. The uniformity of the movement does not depend upon the variation in power of the electric current. The electricity only attracts the piece, B, while the intensity of the shock depends upon the spring, I. A uniform movement once obtained, it is easy, by the ratchets connecting with the wheel, R, to transmit this movement to the hands on the dial, by the agency of an endless screw, placed upon the axis of the said wheel, and communicating with a toothed wheel upon the axle of the dial hands. To make the hands on the dial mark the hours, minutes, and seconds, it is only necessary to proportion the wheels to the office each has to perform. The electro magnet is imbued with electricity from a battery, by wires proceeding from the same. The first electro-magnetic clock ever produced in public, was the invention of A. Bain, who, in 1841, secured a patent for it, and it was the subject of a long controversy between him and Professor Wheatstone. Since that time many electric clocks have been constructed, and this is one of them. Recently it has been applied to clocks quite different in construction, however, by Prof. Bond, of Cambridge, Mass., and Dr. Lock, of Cincinnati, for recording the transit of stars.

Submarine Diving.

Mr. John H. Green, who is employed by Monsieur Maillefert to assist in raising the steamer Atlantic, has furnished the Buffalo Commercial with some interesting information respecting the experience of a diver, from which we extract the following:—

"The marine armor consists of a perfectly air tight india rubber dress, topped by a copper helmet with a clear, thick plate of glass in front. The pipes which supply and exhaust the air, lead from the top of this helmet. The pumping requires much labor—four and sometimes six men being employed upon it at the same time, and compelled to work hard at that. A great pressure of air is experienced by the diver upon his lungs equal to 75 lbs. to the inch, and very few individuals could bear it for any length of time. When first going into the dress, the sensation of oppression is very overcoming, but passes off in a great measure after entering the water. When a depth of ten feet is reached in the descent, the dress becomes entirely emptied of air and collapsed to the body, causing a pressure all over the diver equal to the heft of a ten pound weight, excepting as to the head, which is protected by the copper helmet. The difficulty in breathing now becomes great, and a painful sensation is experienced by the diver; the jaws becoming distended, and the head seemingly splitting.—This contiues until after descending another ten or twelve feet, when the pain is relieved, the diver feels comfortable, and experiences no further inconvenience. When about sixty feet below the surface, hundreds of the legitimate inhabitants of the water surround the diver, nibbling at their strange visitor as though he were 'food for the fishes.' After reaching seventy-five feet all is perfectly dark—a black, impenetrable darkness—and an electric flame plays around the inside of the helmet, caused by the friction of the pump. At about one hundred and sixty feet the water is very cold, being in the present season within four or five degrees of freezing.

Steamboats of the World.

According to the returns made to the Secretary of the Treasury, it appears that the steamboat tonnage connected with the American lakes, exceeds that of Great Britain and all her dependencies. The steamers on Lake Erie alone measure more tons than all the steamboats in Europe, Asia, and Africa, inclusive, provided you leave out those which belong to Great Britain. What a comment are such facts on the boundless resources of our soil, and the go-ahead tendency of our free institutions.—[N. Y. Tribune.

[The above is not correct. If any person will refer to page 189, Vol. 7, Scientific American, he will see a comparison made of the steam navies of America and Great Britain.

Freedom of Arabs from Leprosy.

M. Guyon, in a note to the Academy of Sciences, Paris, attributes the absence of leprosy among the Arabs to their living under the direct action of light and air in tents, while the Kabyles, who often suffer from this disease, live in fixed dwellings often more or less beneath the level of the earth's surface.

LITERARY NOTICES.

LITTELL'S LIVING AGE—Number 437 of this excellent work—the cream of foreign literature—commences a new volume. We have often spoken favorably of this weekly publication, but have rather understated than overstated its merits. We know of no literary publication in our land more instructive and entertaining. This number contains fifteen able articles, selected from the most eminent foreign reviews, magazines, and newspapers. It is for sale by Dewitt & Davenport, this city.

Numbers 5 and 6 of the "National Portrait Gallery of Distinguished Americans," contain portraits of Washington Irving, William White, John Marshall, Lewis Cass, Andrew Jackson, and J. Fennimore Cooper. The biographical sketches are very ably prepared. The work complete will be valuable. Price of each number 25 cents. Wm. Terry, 113 Nassau st., agent.

MEYER'S UNIVERSUM—No. 6 contains beautiful engravings of "The Roman Acqueduct in Segovia," "Chamouni Village and Valley," "Civita Castellana," in Italy, and "Illock" in Hungary. This splendid work deserves to be well supported. Price, each number. 25 cents. H. J. Meyer, 164 William street, publisher.

ARTHUR'S HOME MAGAZINE—Is the title of a new monthly just commenced under the Editorial management of T. S. Arthur, so long and favorably known to the lovers of refined and elegant literature. The number before us is of rare interest and we doubt not of its success. Terms, $2 per annum. Each number will contain 80 pages. T. S. Arthur & Co., Philadelphia; H. Long & Bro., 43 Ann street, N. Y., agents.

GRAHAM'S MAGAZINE, for October, has been sent us by Dewitt & Davenport. It is a very fine number, and abounds in spirited engravings and able contributions

GODEY'S LADY'S BOOK, Edited by Mrs. Sarah J. Hale, and L. A. Godey. The October number is double; it contains splendid embellishments, and a fine array of able contributions from Hasting's Weld, T. S. Arthur, Mary Howitt, and others. Long & Bro., agent, 43 Ann st., N. D.

HEADS AND HEARTS, or, My Brother the Colonel, a new novel, just received, and published by Dewitt & Davenport, Tribune Buildings, price 50 cts.

MECHANICS

The present Volume of the SCIENTIFIC AMERICAN commences under more favorable auspices than any of its predecessors. The amount of subscriptions is double that received within the same period on any former occasion. Aside from all other considerations, we regard it as a flattering testimonial of the usefulness and popularity of the publication so generously supported. We are greatly indebted to our readers for much valuable matter, which has found a permanent record on its pages. The aid thus contributed has been most important to our success, and we are grateful for it.

From our foreign and home exchanges—from the workshops, fields, and laboratories of our own country, we have supplied a volume of more than four hundred pages of useful information, touching every branch of art, science, and invention, besides hundreds of engravings executed by artists exclusively in our employ.

We shall strive to improve the present Volume both in the quantity and quality of the engravings, and in the matter—selected and original. Having every facility for obtaining information from all parts of Europe, through our correspondents, we shall lay before our readers, in advance of our cotemporaries, a full account of the most prominent novelties brought forward.

The opening of the Crystal Palace, in this city, next May, will form an interesting subject for attention. We shall study it faithfully for the benefit of our readers, and illustrate such inventions as may be deemed interesting and worthy.

The Scientific American is the Repertory of Patent Inventions: a volume, each complete in itself, forms an Encyclopedia of the useful and entertaining. The Patent Claims alone are worth ten times the subscription price to every inventor.

PRIZES—We solicit attention to the splendid Prizes offered for the largest number of subscribers, consisting of a SILVER PITCHER worth $60; a set of the ICONOGRAPHIC ENCYCLOPEDIA worth $35; DEMPSEY'S MACHINERY OF THE NINETEENTH CENTURY, and C. B. Stuart's great work upon the NAVAL DRY DOCKS OF THE UNITED STATES. The winner of the first Prize can receive the Pitcher or sixty dollars—we are not particular which is chosen.

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